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THE SPHERE, AUGUST 16, 1941
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THE SPHERE

Vol. CLXVI No. 2169 WITH WHICH IS INCORPORATED THE GRAPHIC AUGUST 16 1941

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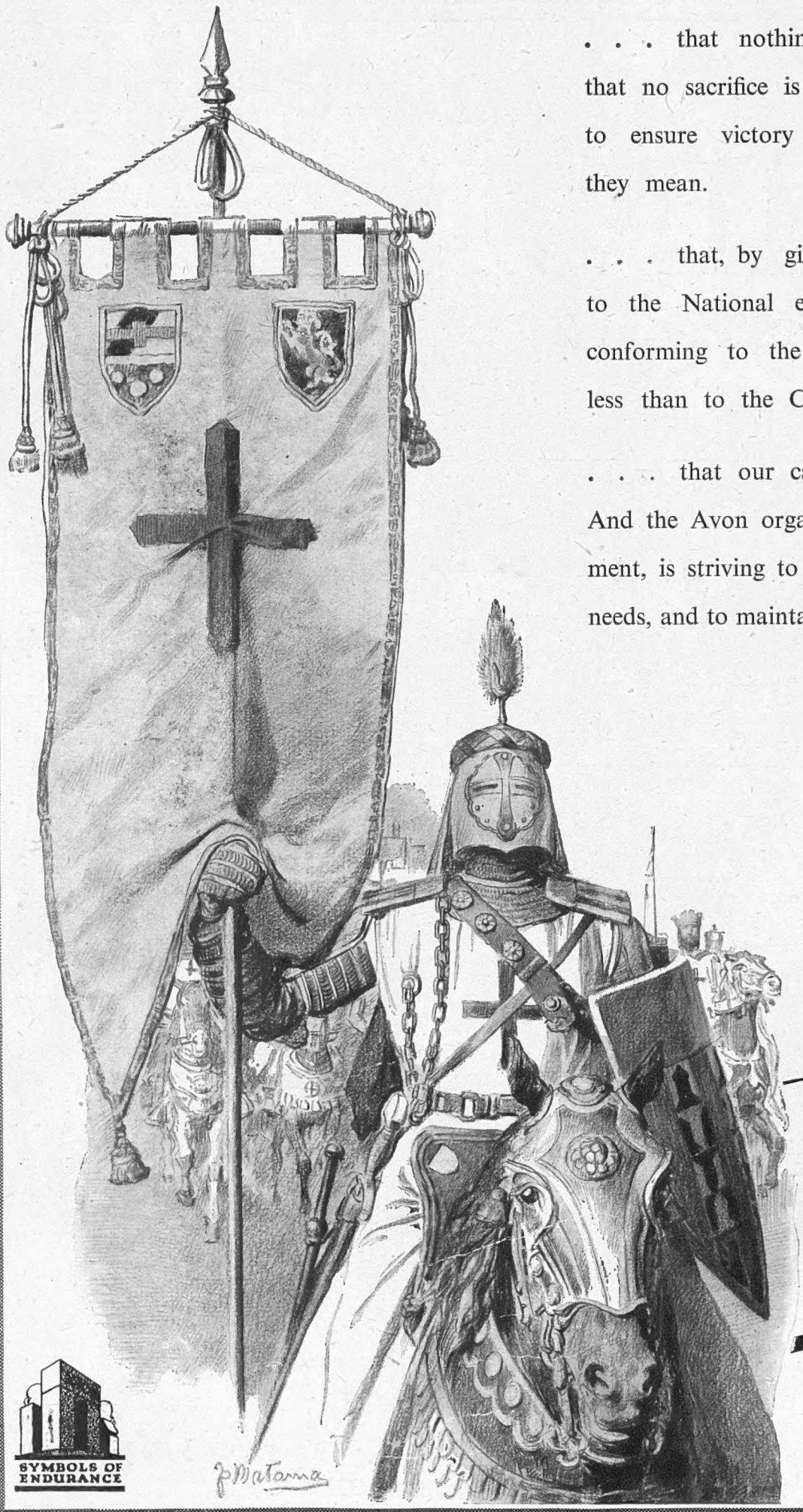

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SYMBOLS OF ENDURANCE

Volume CLXVI No. 2169 The SPHERE, London, August 16, 1941

THE SPHERE
With which is incorporated "THE GRAPHIC"
The Empire's Illustrated Weekly
London, August 16, 1941

THE WAR IN RUSSIA: CONDITIONS ARE NOT EASY FOR THE "PANZER" DIVISIONS OF GERMANY IN THE ROUGH COUNTRY OF THE UKRAINE

Hitherto—even in Greece—the German Heavy Divisions have been able to operate in country possessed of goodish roads, so that their tanks have been able to move from point to point with terrifying rapidity. Thus Holland and France were terrorised, and thus Greece and Yugoslavia were forced to breaking-point. But in Russia it is otherwise: whole tracts of territory are without roads at all—as we understand the term in the West. In addition, there are innumerable streams and many wide rivers. The Russians are everywhere destroying bridges in the areas where they have been forced to withdraw—and this is a vital factor in the slowing-down of the "Panzer" advance. The picture reproduced here (which comes from German sources) shows one of the hold-ups forced on the enemy owing to the primitive road conditions on the Eastern Front. Delays like this may last only a few hours: they may last days. In any case, such delays must, of necessity, ruin any set German time-schedule and throw out of gear that co-ordination between their striking forces on which the enemy has hitherto so prided himself

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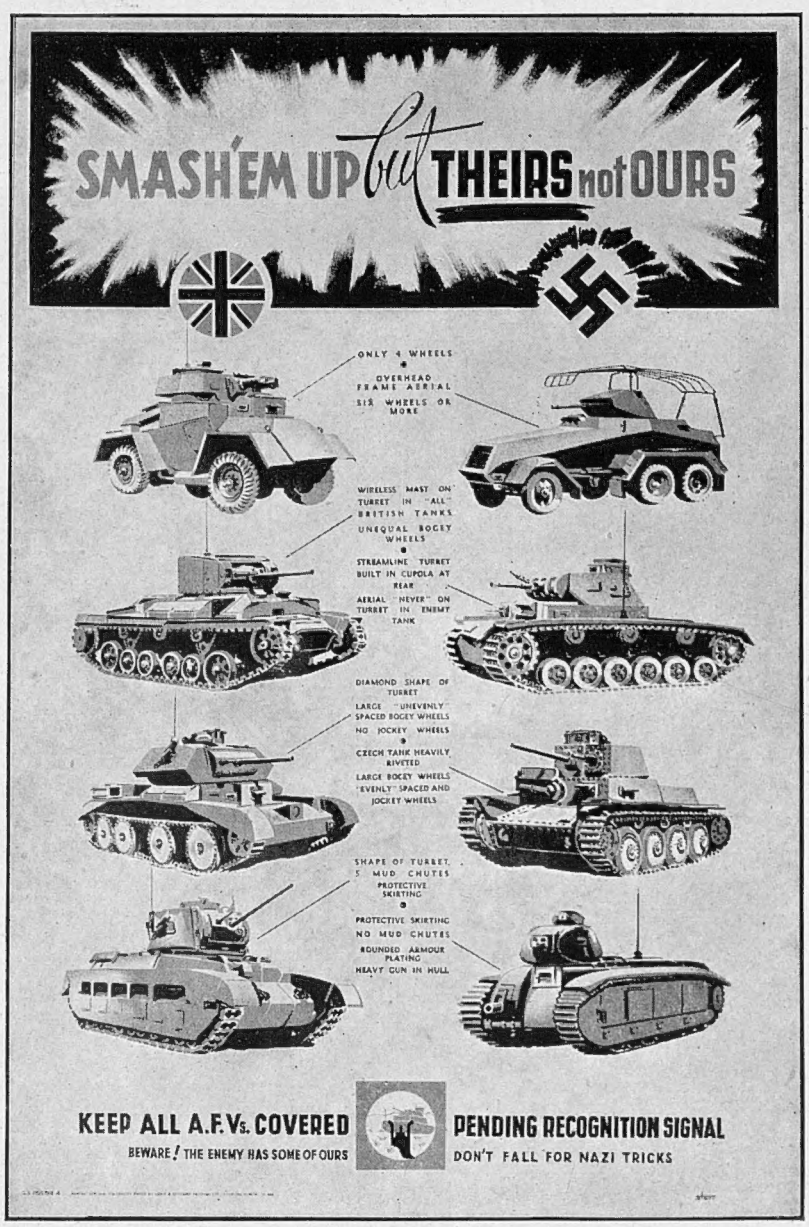
A WAR NEWSLETTER—No. 102

1, NEW OXFORD STREET, W.C.1.

Signs and Portents.—It is difficult, even while we accept the hard truth that the shots in Hitler's locker are very many and very devastating, not to feel the dawnings of a new optimism, which even counterstrokes and bitter setbacks cannot altogether banish. The Russian business had, in the seventh week, thrown on the screen of Europe the shadow of that hand of God, that writing on the wall, which we have always believed must presage the turn of the tide. The Nazi war machine, checked in its "unconquerable" course; the enslaved nations lifting their heads and stiffening or changing their tone; the Axis wobblers returning to the fence; the Nazi war-chiefs and Axis thunderers piping in a lower key; acts beginning slowly and insidiously to take the place of whispers among the enslaved and the huge, sprawled Nazi armies of occupation feeling suddenly that nightmare sensation of being vulnerable to attack from any and every angle, behind and before and sideways. A stirring against Nazi-ism, premature, no doubt, and not to be encouraged to explode too soon, like a damp squib. *But* to be shrewdly and quietly fanned and fostered, none the less. At least, a comfortable memory in the harder days ahead in Britain. . . . The shoots of victory are just below the surface; the roots are very much alive. At the first hint of favourable weather, the heads poke up.

Too Old at Forty.—If official policy on the question of recruitment for our war effort comprehended, even largely, the choice of men and women capable of undergoing athletic training for assault against the enemy, and endurance tests for periods of tremendous physical strain, I could understand the wanton rejection of the middle-aged for so many types of war service. But it is patent that this war will be waged and won as much by the efforts of men and women who must sit in chairs and on stools as by militant athletes. Yet the same policy which chooses recruits for the fighting services appears to govern the selection of recruits for the innumerable war jobs of a sedentary kind, of which welfare workers, labour managers and personnel selectors have been cited as examples. Three out of three hundred! How many lawyers and trained writers of fifty and upward must puzzle their heads over this policy. Many of these men have just attained to the apex of efficiency, through ripe experience, in the invaluable art of *relevance*. They have graduated at last in the hard school of clarity and simplicity in setting forth an argument or a statement of fact, and they could not have graduated earlier, since it takes about thirty years for men of ordinary ability to attain to it. When such "old" men as these read some of the circulars, routine orders and other redundant verbiage daily broadcast by the Ministries to the mystified public, they may be forgiven if they feel that there at least is a job they are well qualified to handle—to get at the essentials of a Government instruction and to set it forth in simple, clear, terse language; and it is not surprising if they wonder whether even in war a trained mind may not sometimes be as useful as a young and vigorous body.

The Need for Criticism.—There never was a time when fair criticism was more necessary and never a Government that needed it more, if only because it is a one-man Government, and a Government which has, such as no Government ever had before, a very full measure of support and a signal loyalty from every class and shade of opinion and from every institution in the country. For that reason, if for no other, men of sense and restraint should never cease to press for the appointment of the best available men for key posts, whether political or industrial, nor to cry out against appointments which smack of mere nepotism or party balance or appear to be rewards for political loyalty (as opposed to good service to the State) in the past. And no occasion should be lost, from a sense of loyalty, to condemn the many still rampant instances of departmental waste, of gross bungling or of half-heartedness and of muddled thinking. The man-power of this country is still a problem hardly thought out, let alone organised. There are thousands of intellectual men now at the very height of their powers who are left in a backwater on the score of age, whose experience in a number of spheres would be invaluable to the war effort. Their signal abilities are dissipated while they work as observers or fire-watchers or what-not, and it is their bare duty as citizens to use their experience as critics, while that experience is spurned, in the constructive spheres of administration for which it is marked out.



A STRIKING WAR OFFICE POSTER which has just been issued to members of the Home Guard: For identification purposes, this new poster seems ideal. It gives the essential differences between German and British tanks, and their chief characteristics. The idea is, obviously, that members of the Home Guard should so familiarise themselves with the details that they can tell instantly which are ours and which the enemy's

The Greys, Too.—Finis has been written to the glorious and coloured and inspiring history of the British cavalry. The last surviving horsed regiments—the 1st Dragoons (The Royals) and the 2nd (The Greys)—are chauffeurs now. Never again will Edinburgh or London or Aldershot see that beautiful spectacle which inspired even the pacifist with poetry and martial fervour: the Greys in full panoply riding by on their well-matched grey chargers. Certainly it was a sight worth seeing, and impossible to forget. So I have seen them in peace and in pageant in full pomp and panoply; as I saw them often on the broken roads in France, with stained khaki riders and grey horses stained khaki. Their training and their traditions were an inspiration also, for both had their roots not only in hard war experience and military glory, but in an especial soil of pure romance, created fortuitously by poets and artists. How well I recall the pride (which came before a fall) of being mistaken for a "Grey"! My Yeomanry Regiment had a badge not unlike their Eagle. We had, too, a real "Grey" as adjutant (and a great adjutant he was). We were trotting up towards the Battle of Loos, through the waiting Guards, and roars of applause greeted us. "The Greys, God bless 'em. Scotland for ever!"—they yelled. Then a cool voice cut in: "Garn, they 're only some ruddy terriers on horseback!"

A Lost Art.—Holiday-making is an art, and one acquired with bitter experience and infinite research. I am wondering whether I have forgotten it. Reader, we are going on a holiday. Not, indeed, a holiday from journalism, for that I have not had for a single week since 1927. But a holiday from home, for indeed we have not slept away from our home for a single night for two years. We are going to travel to a distance of forty miles. It is a tremendous uprooting, a terrific adventure into the Unknown. What will life be like beyond the Ranges? Who will be able to cope with the thousand vital, urgent daily jobs at home which have engaged us every minute of the waking hours for two years? Shall we, during our ten days' absence, tune and correct our minds to a just proportion, so that we view these tremendous tasks as trivial and so that we learn to be gracefully idle in new surroundings for a whole week? I doubt it. In two years people can become so wedded to trivial, daily chores that such duties assume the proportions of key-jobs which can be delegated to no others, which none can accomplish but ourselves. Two years of routine prison-life may turn a man into an egotist, a monomaniac or a recluse. He may lost the initiative and courage necessary for making even the shortest journey "into the blue." Not that we are going to idle; we are going to do farm-work-unskilled labour, a busman's holiday. But the vital thing is: for a few days we shall not see the familiar view from our windows, and shall be feeding someone else's fowls, and putting up someone else's black-out, and listening to someone else's wireless. It is an awfully big adventure, a root-and-branch upheaval.

"It's Gone for Good."—This is the title of a little book of autobiography by John Baker White, which came into my hands. It is a publisher's wartime production in a paper cover, and it is full value for 3s. 6d., if you care for the coloured life of the Ring, the Big Top, the Underworld and the Secret Service. Into less than twenty years of adult life the author has certainly crammed a very full and very varied ration of adventure, and exchanged with Jew and Gentile many a shrewd blow. In the last sentence of his book he sums up those features and institutions of the old England that have gone for good, which he would rescue and enjoy again if he could. "The Canterbury Cricket Week, the local flower-show, duck flighting at Iken Cliff, the buglers of the Rifle Brigade blowing a fanfare outside a rebuilt Guildhall on Lord Mayor's Day, a lark singing above a Kentish garden." Well then, I think I can promise that, if he survive this war, the author may yet enjoy the whole catalogue of his vanished joys. He couches his demands on the Fairy Godmother very modestly. Much of what he enjoyed in the past may be gone for good, and for the good of all. But these items which he lists were good in themselves, and will not go for good. Moreover, if he will read the Whig memoirs of 1820, or the Tory memoirs of 1750, our author will find that doomed British institutions (good or bad) take an unconscionable time a-dying.

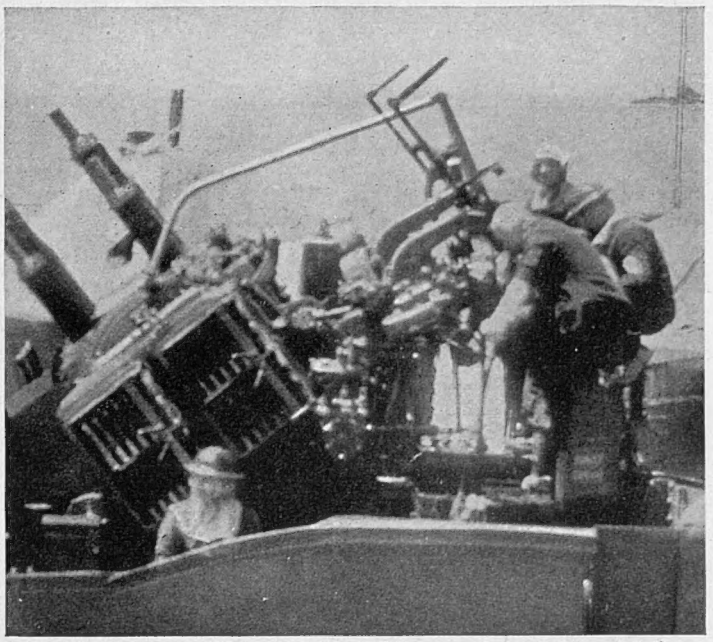
Road Deaths.—In the month of June, over 600 people were killed on the roads and over 15,000 injured more or less seriously. The large proportion of these casualties occurred in daylight, and the deaths for the month showed an increase of more than 25 per cent. over June of last year. Yet the roads are deserts compared with what we had become used to in summertime in days of peace. What class of driver is chiefly responsible? The Army employ learners to drive along the roads, as studied policy. Yet the Army can always adduce statistics to show that their responsibility for this shocking state of things is not abnormal or out of proportion to the numbers of Army drivers on the roads. It is impossible not to observe in a run of twenty miles that many Army vehicles are driven badly, too fast, and without consideration. Equally, one observes a curiously large number of civilian "learners" on the road. In a drive of forty miles last week, I passed four accidents which had all apparently occurred within a few minutes. There is evidently no time to begin a new, serious campaign to reduce this needless tragedy. But tragedy it is, with nobs on, in a total war in which the Nazi Saul slays his thousands a month and the home-born David slays his ten thousands. It is appalling to think that from gross carelessness and juggernaut selfishness and sheer incompetence the dangers of the road are greater than the fearful dangers of war. We are working up to a quarter million of road casualties a year, and the black-out is not a serious contributory cause. The Minister of Transport should make a little extra time for an urgent duty.

THE OLD STAGER

THE THREE-DAY ATTACK

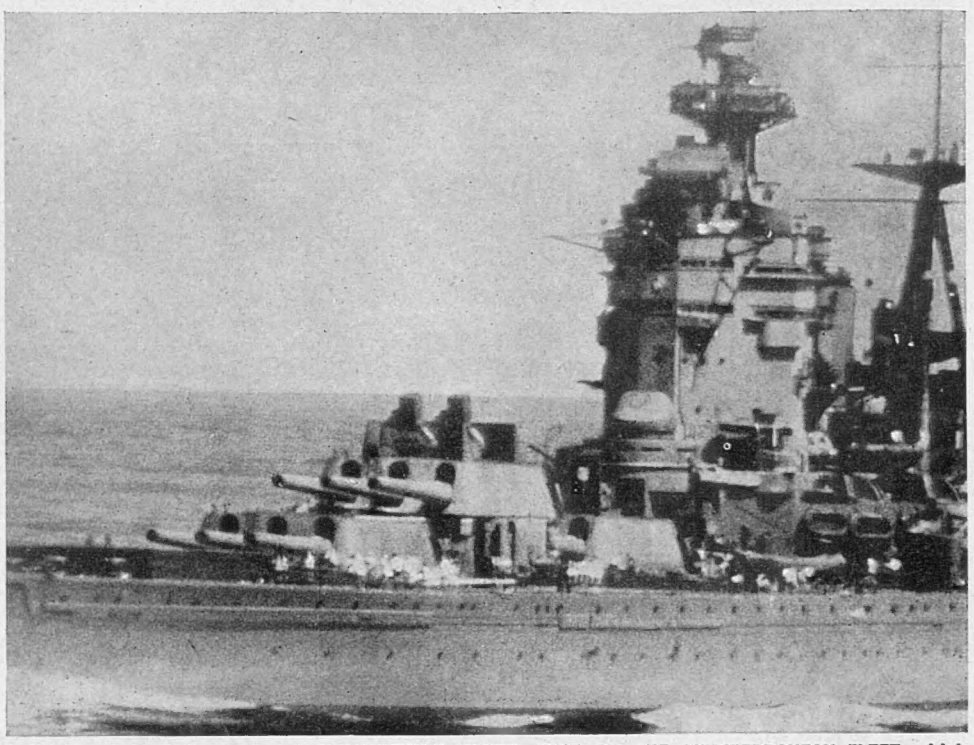
The Newsreel Records Incidents During July 22-24

THE VERY EFFECTIVE MULTIPLE POM-POMS of a British warship in action during the engagement in the Mediterranean

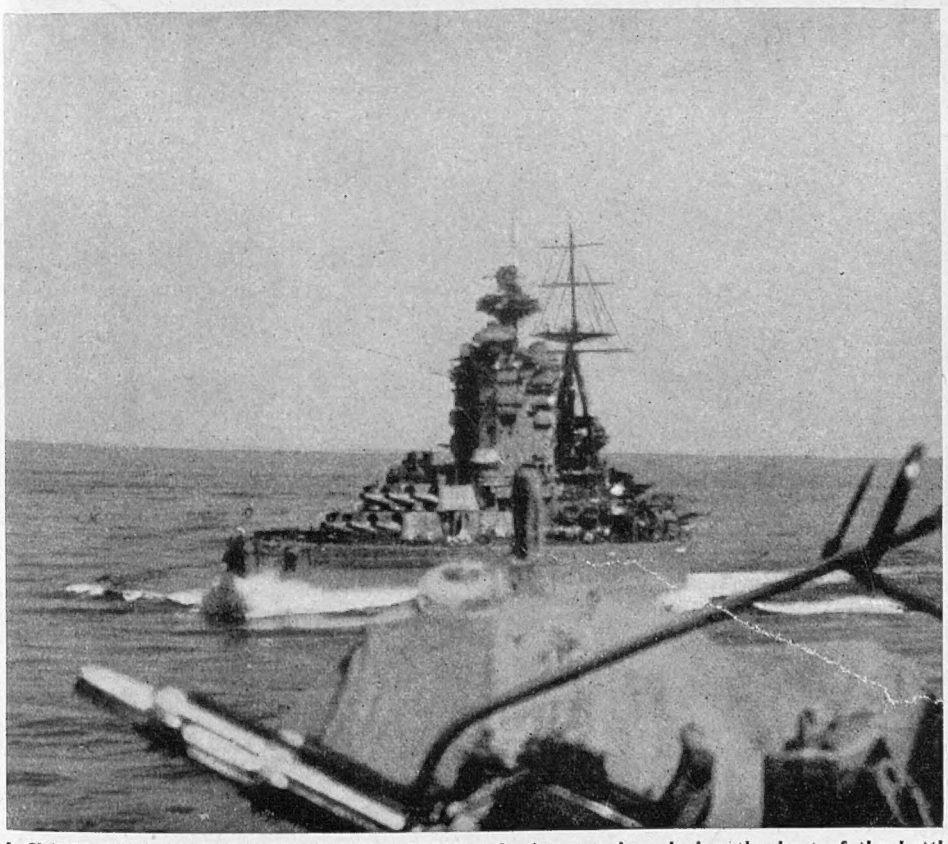


ANOTHER VIEW OF THE POM-POM CREW operating their quick-firing guns in the warship's tray-like deck structure

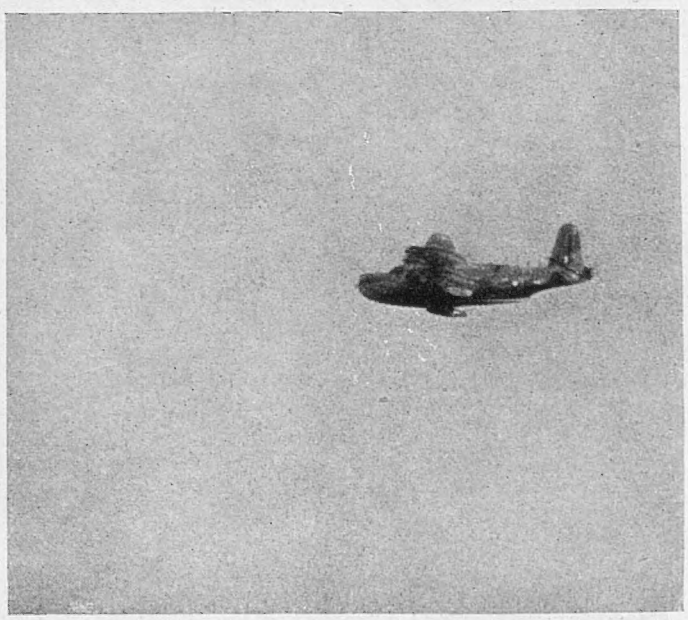
THE SKY FILLED WITH EXPLODING SHELLS, sent up by our ships against the enemy aircraft during a bombing attack



A POWERFULLY ARMED UNIT OF THE MEDITERRANEAN FLEET which accompanied the convoy during the action



A CLOSER VIEW OF THE WARSHIP SEEN ABOVE: A picture taken during the heat of the battle when the vessel was steaming fast (as indicated by the bow wave)



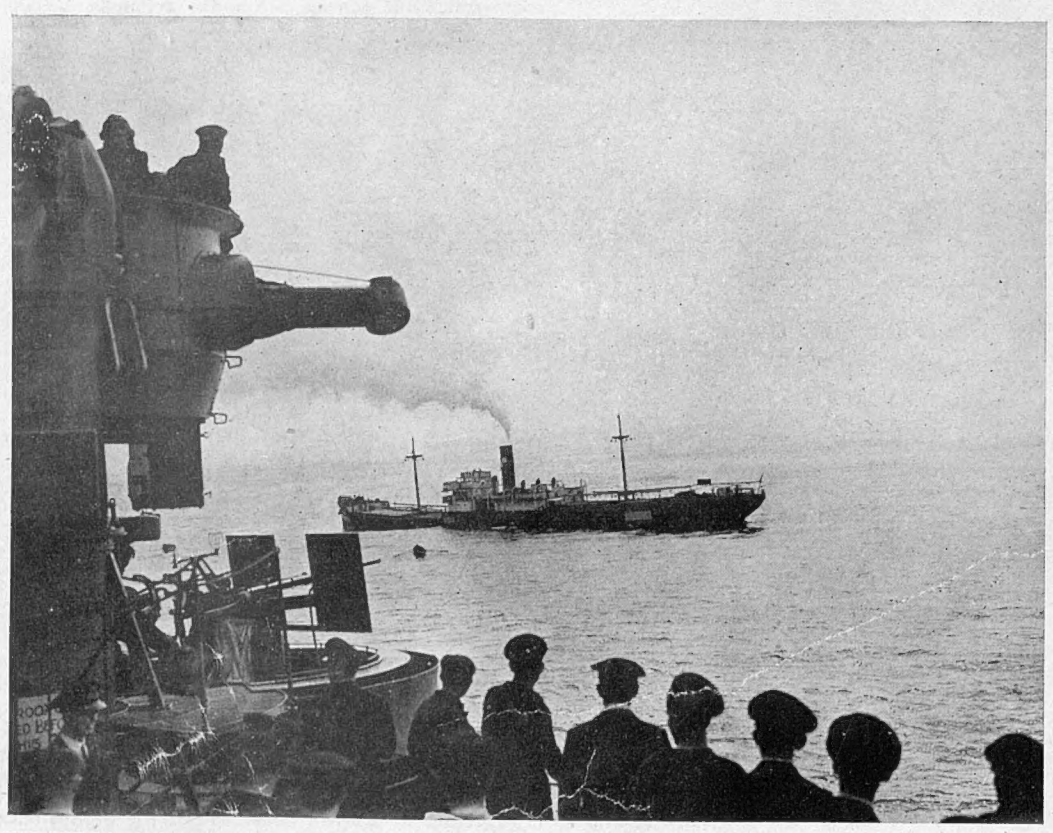
ONE OF THE ENEMY PLANES FLYING LOW DURING AN ATTACK

In last week's issue of *The Sphere* we published a large diagram and a number of dramatic pictures in illustration of the combined Italian and German attack on an important British convoy in the Mediterranean. We are now enabled to supplement these with other pictures taken by a British Newsreel photographer on board one of the war vessels which participated in the action. It will be remembered that this was the action in which the destroyer *Fearless* was lost—but the convoy got safely to port, carrying men, munitions and supplies to the Middle East

AN AIRCRAFT OF THE COASTAL COMMAND HUNTING OUT ENEMY SHIPPING : The second pilot flashing a recognition signal to a ship below ; in the foreground are the Very light cartridges

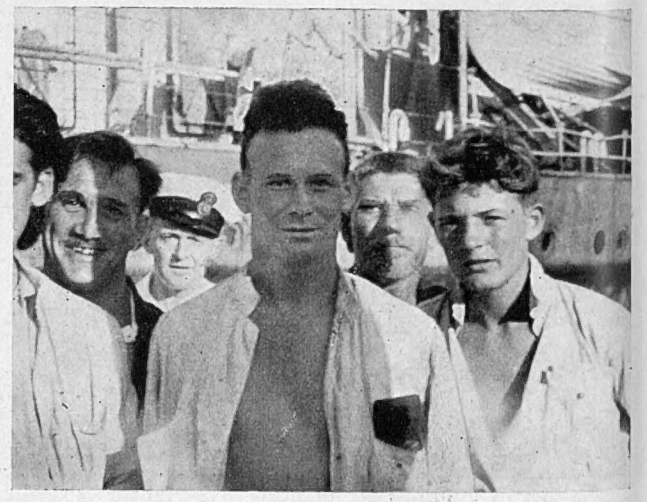
The German at home may fondly imagine that British ships are being sent to the bottom at a fantastic rate : a certain number of them are being sunk in the Battle of the Atlantic—*but, pro rata*, German and Italian shipping is suffering much more heavily at the hands of the R.A.F. And the enemy's need for what remains of his mercantile fleet is even greater than our own. More and more, owing to the dislocation of inland waterways and railways, the Germans are depending on sea-borne traffic ; and amongst these coastal convoys the R.A.F. is wreaking tremendous havoc. During last month alone 459,000 tons of enemy shipping were destroyed or put out of action. The pictures reproduced on these pages show how this wonderful figure is achieved by the never-ceasing efforts of the British Navy and R.A.F.

UNCEASING WARFARE ON THE ENEMY'S SHIPPING

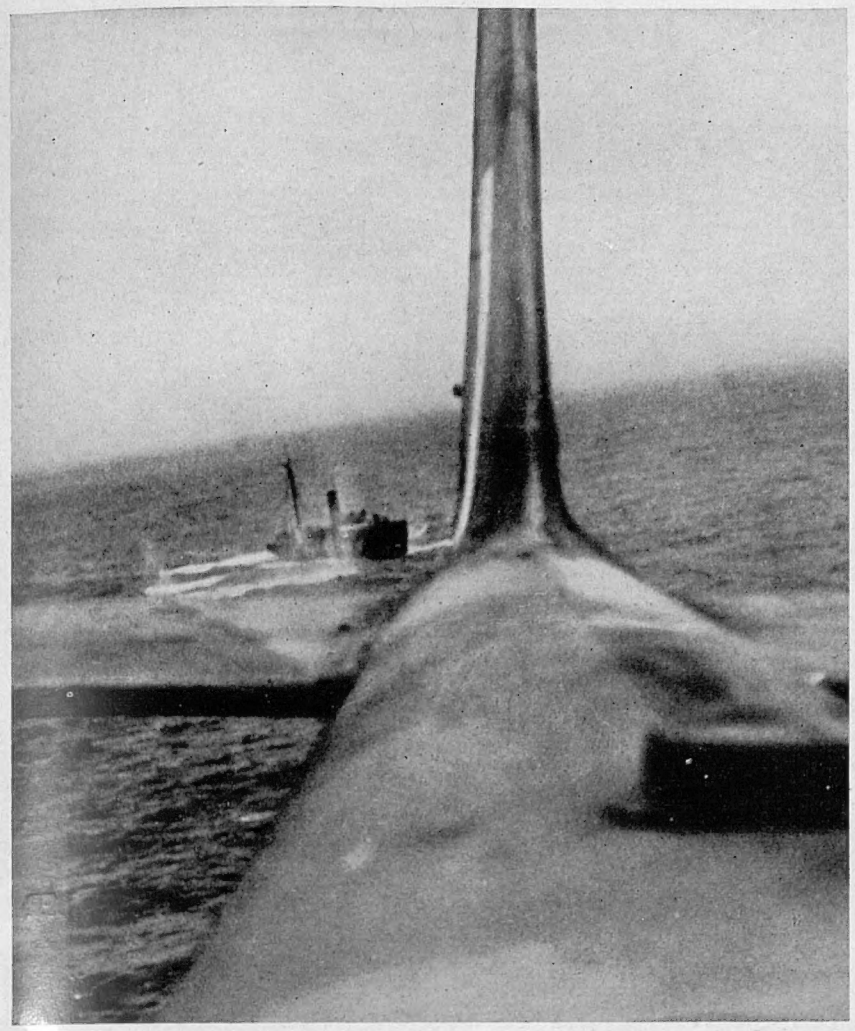


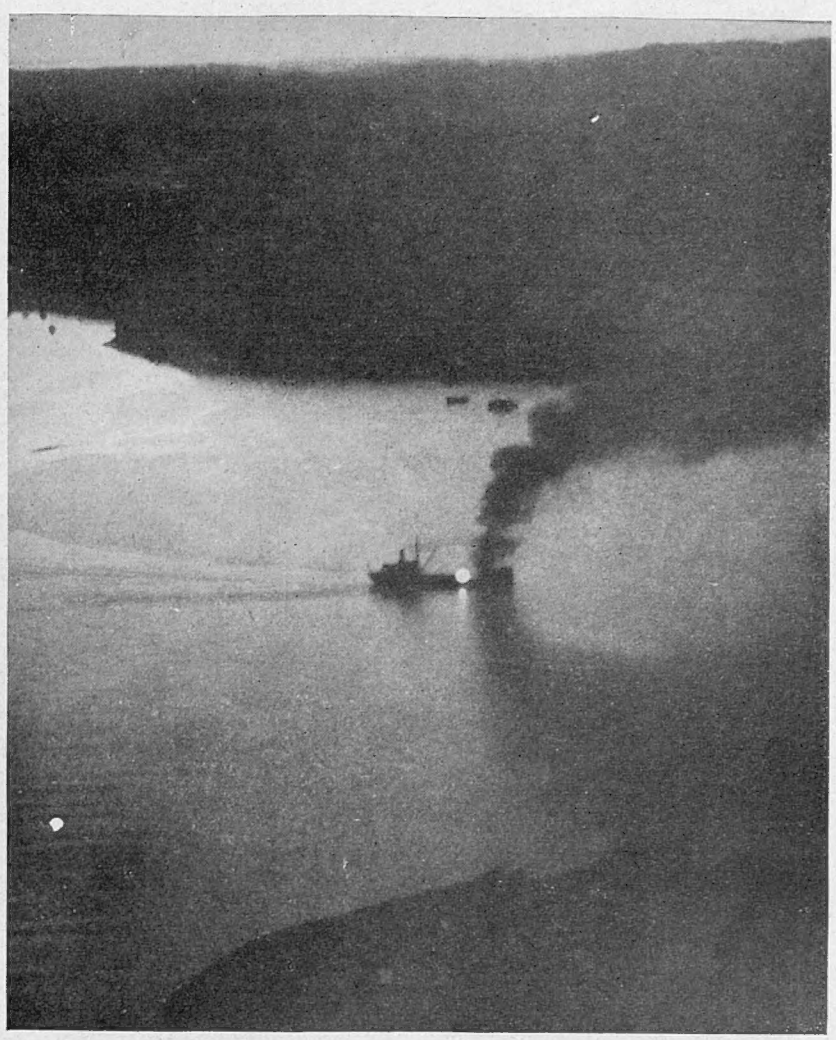
THE INTERCEPTION OF A VESSEL AT SEA BY THE ROYAL NAVY : The boarding party from a British war vessel are here seen nearing a neutral ship which has been stopped on the high seas. After an examination of her papers, the merchantman was found to be in possession of a British "Navicert," and she was accordingly allowed to proceed

GERMAN PRISONERS, captured when an enemy sea raider was sunk, walking down the gangway from a ship of the Royal Navy at a British port



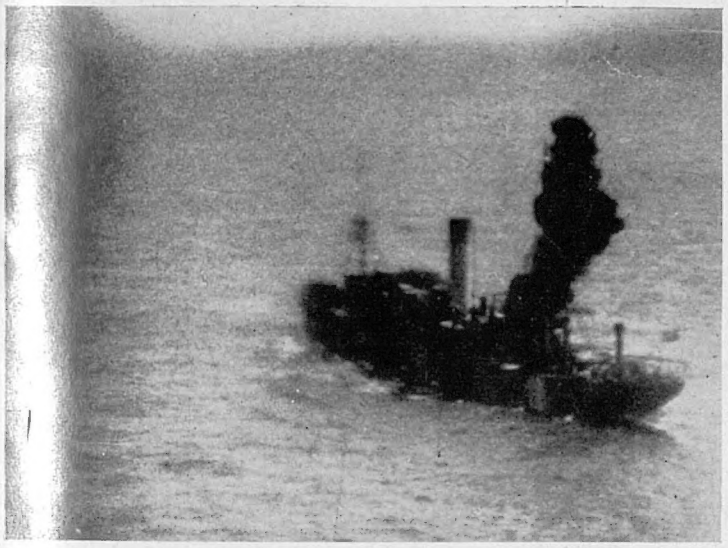
BRITISH SEAMEN, held captive by a German sea raider, rescued when the enemy vessel was sunk by the Navy

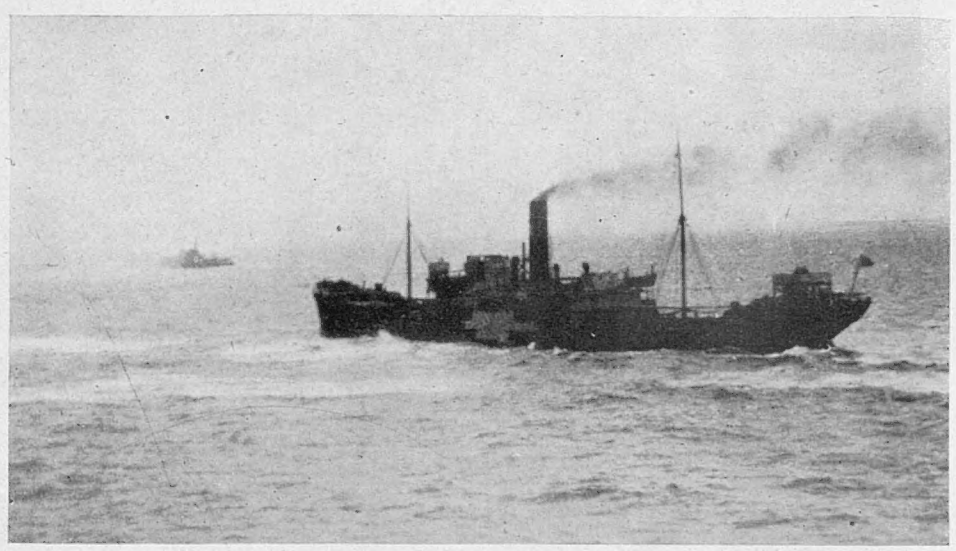




TWO AIR MINISTRY PICTURES WHICH DEMONSTRATE HOW THE R.A.F. CARRY OUT THEIR ATTACKS ON ENEMY SHIPPING

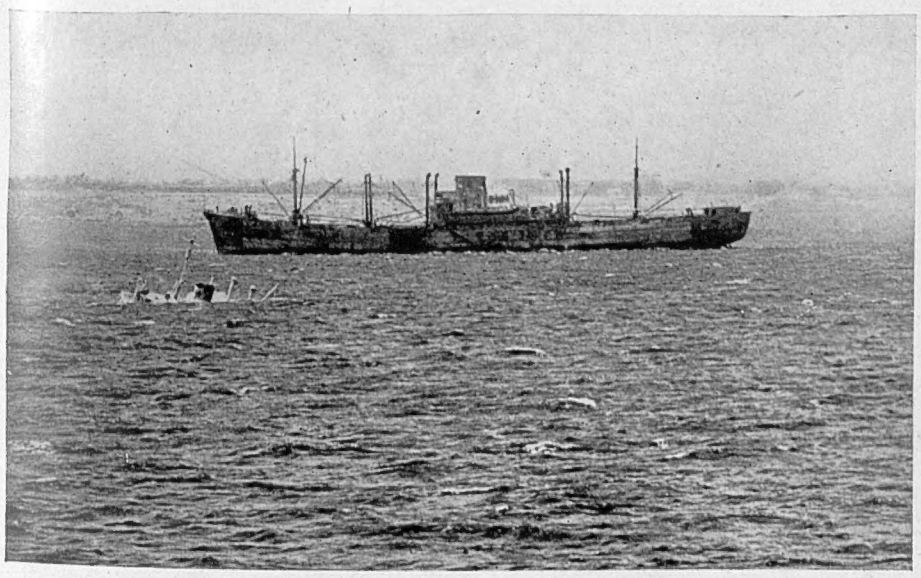
The widespread range of operations carried out by our bombers is well exemplified in the two pictures above. The one *on the left* shows an aircraft of the Bomber Command attacking a vessel of 2,000 tons off the west coast of Holland: two hits were scored on the stern of the ship, which was left on fire and sinking. The picture *on the right* shows what a Beaufort of the Coastal Command did to an enemy vessel in a fiord in south-west Norway. The vessel seen here is a German tanker: it was hit by a heavy bomb on the foredeck at 4 a.m. The vessel, as the wake indicates, turned from her course after the attack and was beached by the crew, who eventually took to their small boat



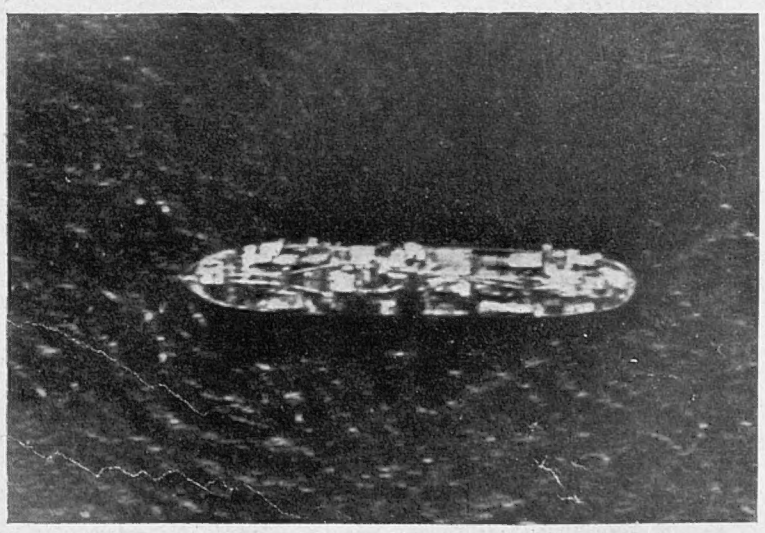


AN ATTACK MADE ALMOST AT SEA-LEVEL BY THE R.A.F. ON AN ENEMY CONVOY OFF THE DUTCH COAST

This attack was carried out by Blenheim bombers on a convoy of eight ships. These were protected by six *flak* ships, indicating the importance to the enemy of the convoy. The action took place off the Dutch coast near The Hague when the convoy was steaming north, and the attack was made from a very low level, for greater accuracy. *On the left* a 4,000-ton ship of the convoy is on fire following a direct hit; and *on the right* an armed merchant vessel is seen zigzagging violently as it attempts to escape the bombs. Despite the heavy anti-aircraft fire, the Blenheims pressed home their assault. How low they came over the water to launch their bombs can be gauged from these pictures, taken almost at mast height



R.A.F. BOMBERS IN ACTION AGAINST SHIPPING AT TRIPOLI: Enemy vessels anchored off Tripoli harbour are the constant objective of the bombers of the Mediterranean Command. Here is the result of one of their attacks—a sunken Italian motor vessel outside the harbour

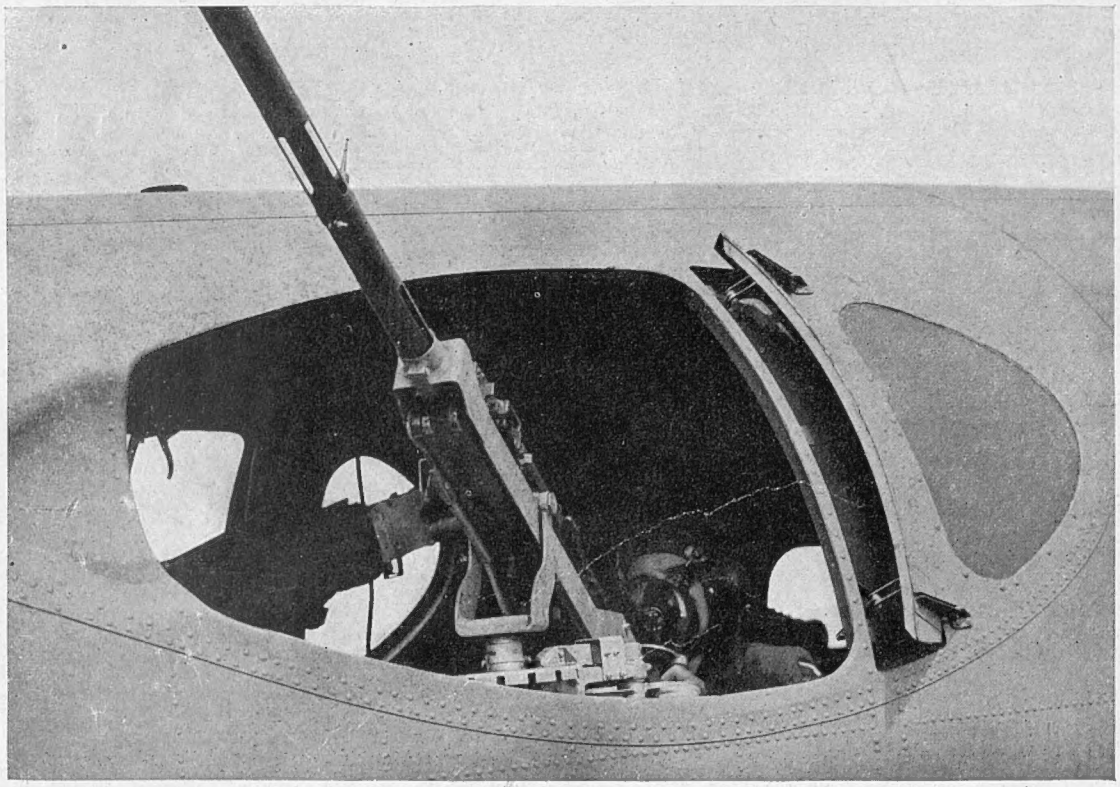


THE DESTRUCTION OF AN ITALIAN CONVOY OFF TUNIS: This convoy consisted of four Italian motor vessels which were steaming along the North African coast towards Libya. They were accompanied by a destroyer escort, when they were located off Kerkenna Island, off Tunisia, by a Maryland bomber on patrol over the Mediterranean. Later the convoy was attacked and sunk; this picture shows one of the vessels as it was beached after the attack

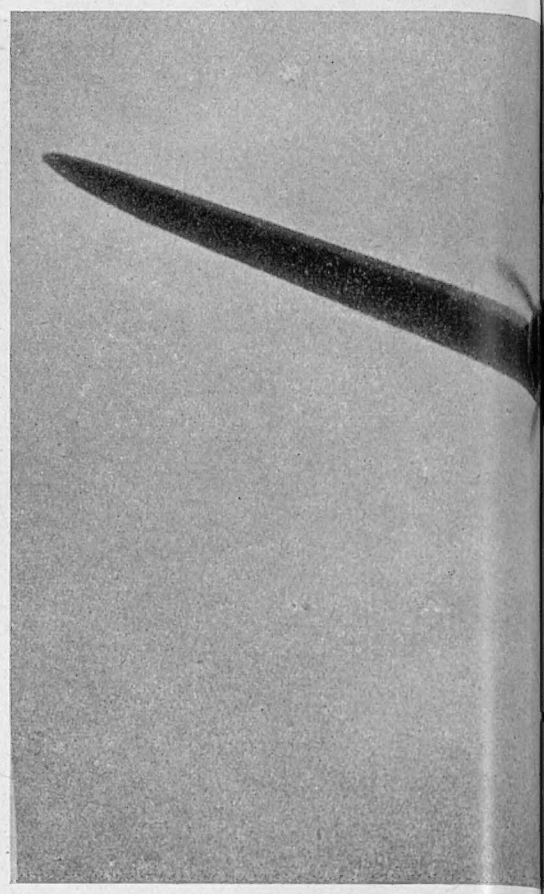
THE FLYING FORTRESSES OF THE R.A.F.

A Series of Pictures of the Huge American-built Bombers which Carried Out the First Stratosphere Raids on the "Scharnhorst" and the "Gneisenau"

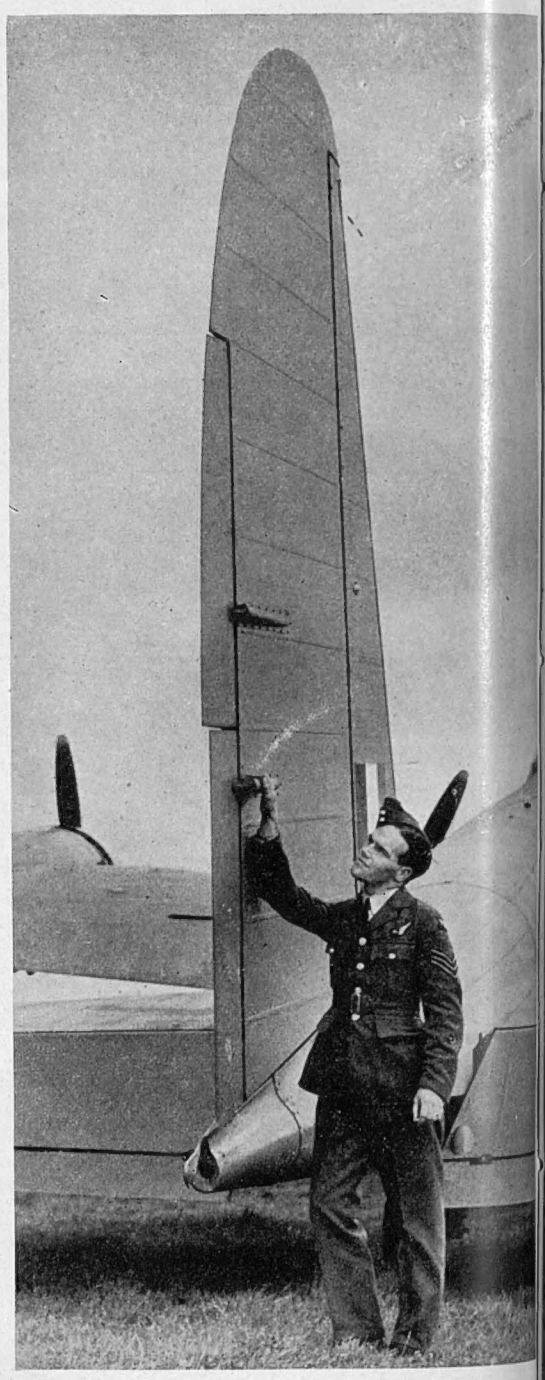
SEATED WELL UP IN THE NOSE, a Squadron Leader of the R.A.F. operates the controls of the huge bomber : he has with him in the aircraft a crew of from seven to nine



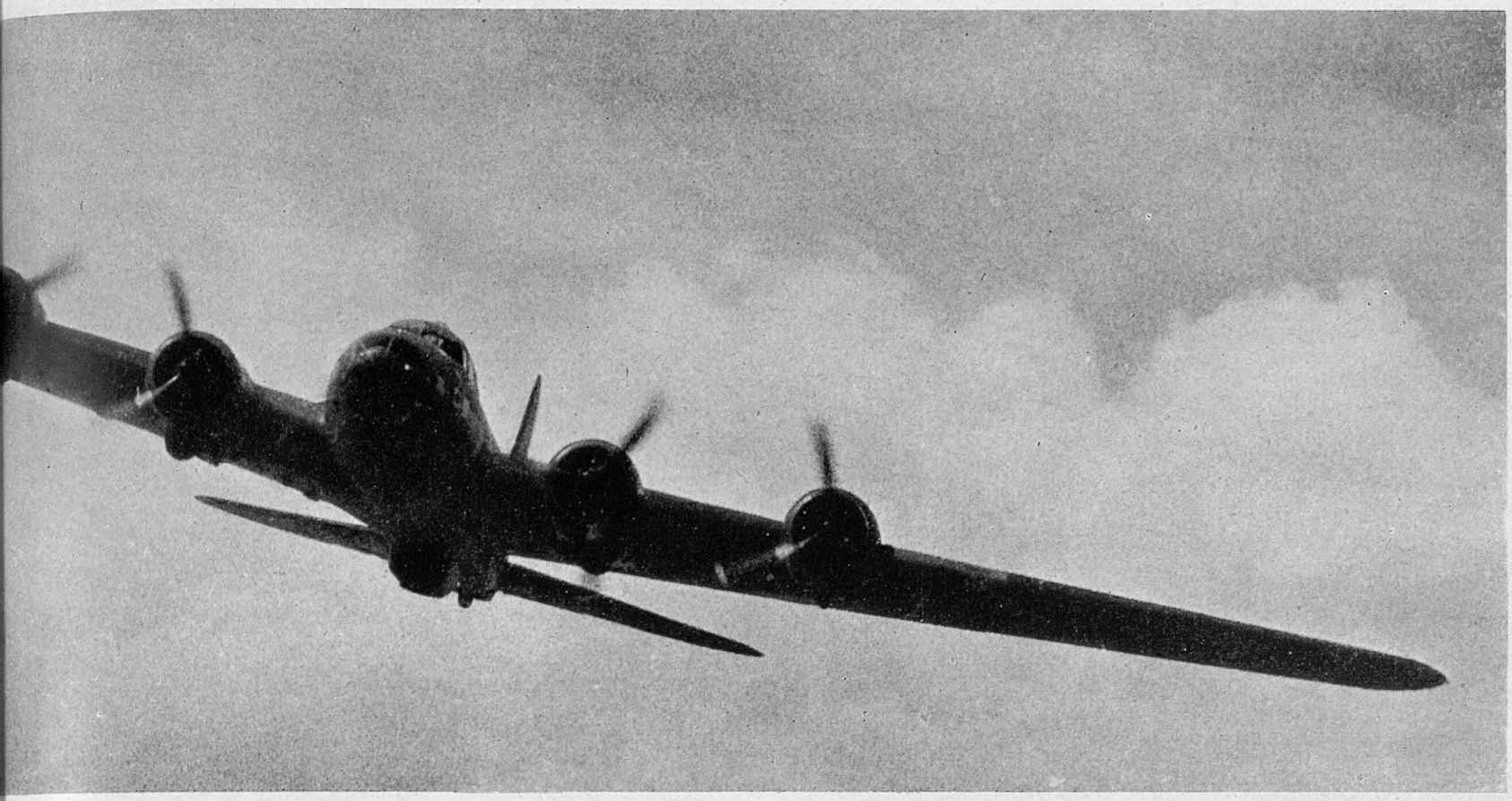
AN EXTERNAL VIEW OF ONE OF THE GUN POSITIONS : There are five rifle-calibre guns, and these are manually operated. They are fixed in different positions and command wide arcs of fire



THE HUGE FOUR-ENGINED BOMBER IN

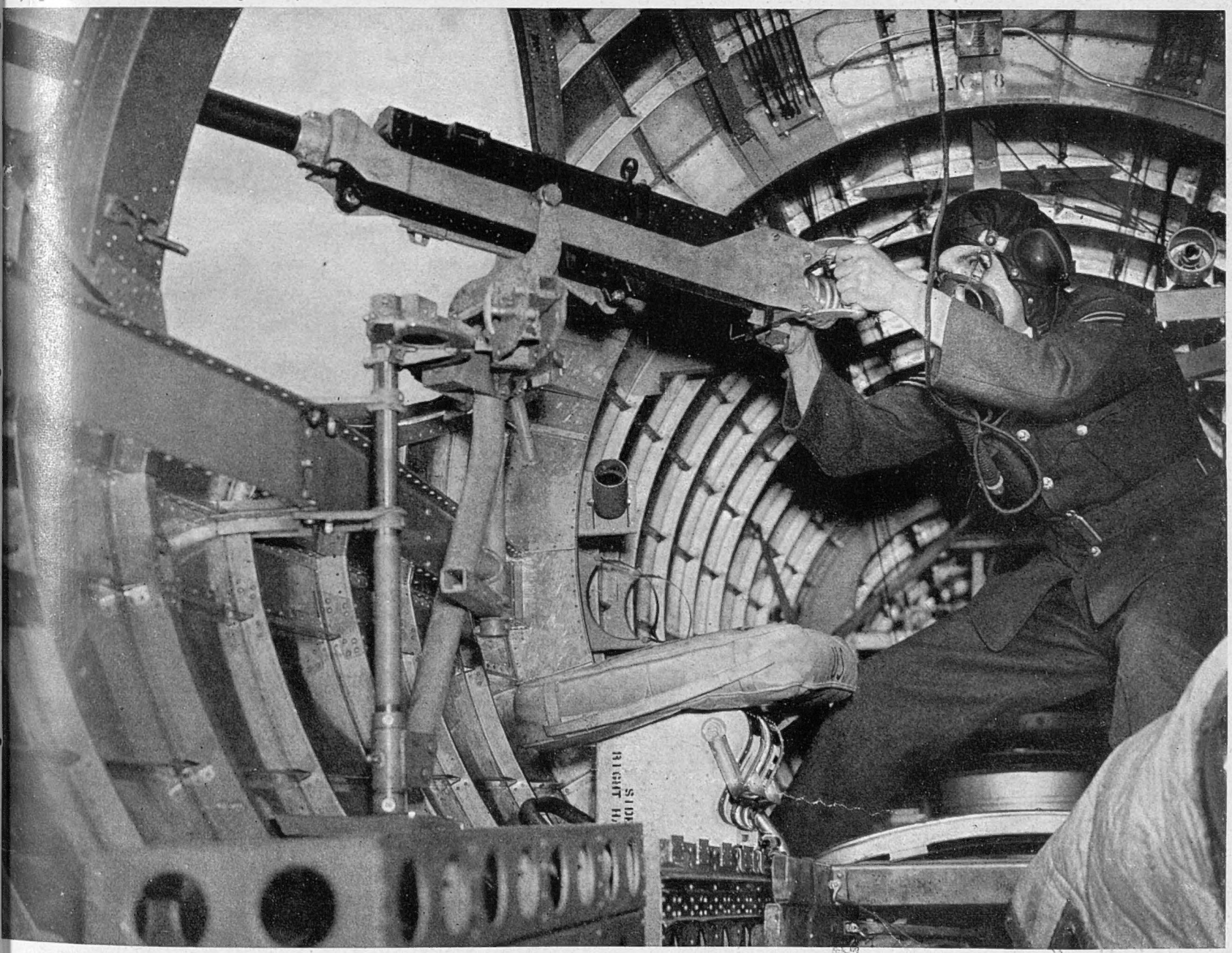


THE ENORMOUS SINGLE-TAIL FIN : The rudder area, as might be expected on such a huge aircraft, is enormous. The small movable portions at the very rear of the fin are the trimming tabs with which the pilot controls any tendency to swing to starboard or port when the aircraft is in steady flight



FLIGHT: THE WING SPAN IS NEARLY 104 FT. With its four Wright Cyclone engines, the Flying Fortress has a top speed of 325 m.p.h. and a cruising speed of 270 m.p.h.; its range is just over 3,000 miles and it can carry a heavy load of bombs

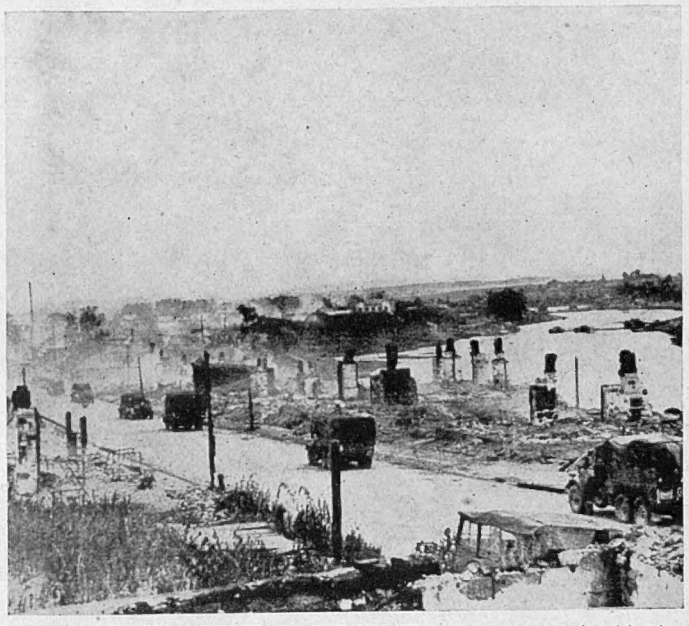
The huge Boeing aircraft, known as the Flying Fortresses, have already been engaged on operational work—at Brest, for the bombing of the German battleships, as well as over Germany itself. Although not the largest aircraft operated by the R.A.F., much is expected of the Boeings. It is reported that these big bombers fly very well indeed, and, owing to their long range, we might be hearing quite a lot about them during this coming autumn and winter. The Flying Fortress is a low-wing monoplane fitted with four Wright Cyclone engines each of 1,100 h.p.: these give the bomber a maximum of 325 m.p.h., although at stratosphere heights—so thin is the air—this drops to a maximum of 300 m.p.h. The dimensions are as follows: span, 103 ft. 9½ ins.; length, 67 ft. 10½ ins.; height, 15 ft. 4½ ins. The weight of the aircraft empty is nearly 12 tons, but its total weight when fully loaded is in the neighbourhood of 20 tons. When engaged by the R.A.F. on operational flights a crew of from seven to nine is usually carried



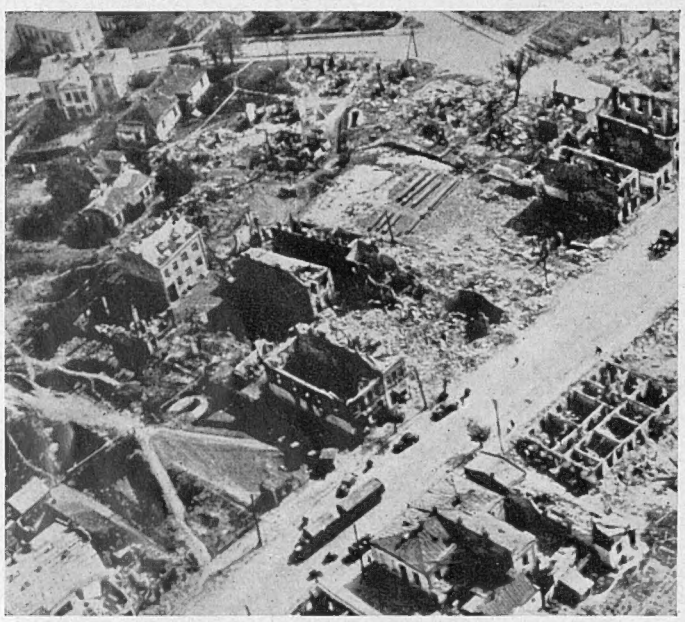
WITHIN THE FLYING FORTRESS: The air-gunner and his rifle-calibre gun—one of five such mounted at various points within the huge aircraft. The gunner is wearing oxygen mask and telephonic mouthpiece. Structural details of the aircraft are well brought out in this picture

SCENES from the EASTERN FRONT

Further Pictures of the Russo-German War are given on pp. 202-03 of this Issue

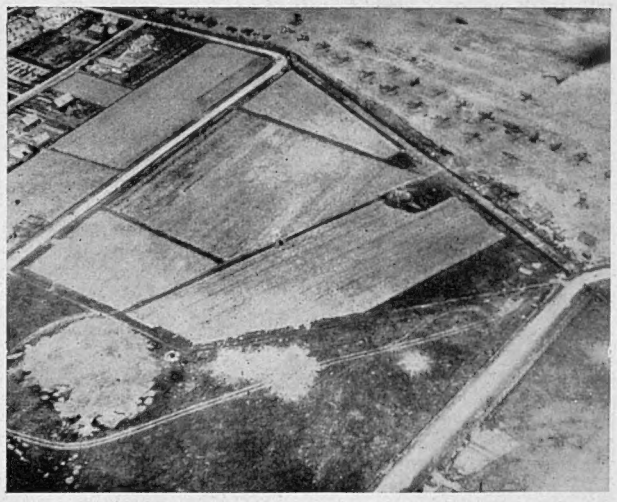


GERMAN LORRIES MOVE UP TO THE FRONT : A scene on the Minsk-Moscow highway, with a lorry convoy passing through a Russian town which has been bombed and burned



WHAT REMAINS OF THE RUSSIAN TOWN OF LUCK, after a series of aerial attacks by the "Luftwaffe"

THE GERMANS STILL CLAIM SMOLENSK : This picture is stated by the Germans to show "German troops passing through the main streets of Smolensk"; but at the time of writing the Russians were still stating that they were in possession of the city. Intense fighting has been going on in the area for some weeks now



KOVNO AERODROME AND ITS BURNT-OUT AIRCRAFT : These aircraft are stated to be Soviet aeroplanes which were totally destroyed in German bombing raids

THESE RUSSIAN PEASANTS ARE STATED TO HAVE ACTED AS GUERILLAS : The Russian peasants have proved themselves a great thorn in the Germans' side; yet it is difficult to believe that the group above were actually captured in this fashion—with guns and rifles in their hands, as the enemy claims! The German caption states that the little group had just been rounded up by their soldiers behind the fighting line

A NAZI PLANE ON A DAMAGED RUSSIAN AIRFIELD : It is stated that this aircraft was surrounded by wrecked Russian aeroplanes. The picture prompts one to ask why the enemy is using such hopelessly out-of-date aircraft as that shown above

V WARFARE—ITS CHANCES AND RISKS

The "Revolution by Radio," in which the Subject Peoples of Europe are Being Schooled to Organise Against Quislings, Occupation Troops, "New Orders," etc., is Here Discussed in All Its Implications

By FERDINAND TUOHY

I HAD come to associate the V sign with a mysterious "Colonel Verdun," first to begin courageous underground operations against the Germans in Holland last autumn. I should like to think that this was the case, because the integrity and true purpose of the V require to be preserved, and "Colonel Verdun" embodied both.

Already the V has spread round the universe, as any clever and attractive notion was bound to do at this juncture. It is being copiously used for advertisement and gain, for self-parading and flaunting one's patriotism, for spurring on others, for bolstering this and pushing that. If there is no harm in people forgathering at V-shaped luncheon tables and displaying V's on their cars and premises, a fair comment on meaningless capitalisation of the Sign of Deliverance is that in a free country like Britain the V should be extended to two V's, or a W, standing for Work, the best way the civilian multitude can help Hitler's Continental victims. In the wider world, and especially in the United States, vulgarisation of now historic letter 22 of the alphabet can be of positive service to the Allied cause. The Americans love signs and symbols, and if by exploiting the V they feel themselves just a bit more in the struggle, all the better. This is precisely what Robert Waithman tackles in a message to the *News Chronicle*:

"On the surface there is something faintly ironical about Americans sounding their motor-horns in the three dots and a dash manner, and saluting one another with two outspread fingers, but much of the explanation of these phenomena lies a long way below the surface. An American whose job it is to watch and judge public opinion said to me: 'At this moment we are a mentally sick nation.' What he meant was that there are few greater agonies than the time of doubt before decision is reached."

Remains Goebbels' ludicrous collaring of the V. His V for *Viktoria* will deceive people in Germany even less than it should deceive in the captive States. For nigh on a decade the Germans had one thing and one only bawled at them through amplifiers when they were being conditioned to think of victory. *Heil Sieg!*

In ordering the use of V as a Nazi symbol, Dear Doktor overlooked a second matter: that by so doing he automatically rendered impossible the arrest, as previously, of persons whose premises were found to be decorated with a V. So now the Gestapo has a new job: that of keeping a list of those premises and sites only, which are authorised to show the Nazi V. The more jobs of this kind the Nazis encumber themselves with, the better. They induce mirth among onlookers, and mirth in a revolutionary atmosphere is a good sign—for the oppressed. In France the V's of Nazi origin are being inlaid with a Cross of Lorraine.

To turn now to that field where "Colonel Britton" and his aides aspire to operate in crescendo fashion, we must not fool ourselves into thinking that the pronounced increase in Continental restlessness is predominantly the result of the V campaign launched on July 20. A great deal of it may be traced to response to Moscow propaganda, this being notably the case in the Balkans and in France. Important parts of France are possibly as open to Communist liberatory influence as they are to V stuff from the Allies, and this brings up a point of interest. Why should there be any fundamental difference between the campaigns directed from West and East, seeing that each aims at the deliverance of a dozen lands from Fascism?

It might be a good thing if London and Moscow avoided controversial issues—indeed, cut out such things as politics and religion altogether—lest those they aim to rescue be thrown back into doubt and lose some of their enthusiasm. It seemed singularly lacking in insight to broadcast about the Bible in launching the V campaign, simply in order to put into circulation that line about "the writing on the wall." Many of those inclined to be most useful abroad have sympathies or antipathies which do not exactly lay them open to approach from the Biblical angle, or from that of Anglican righteousness.

As appeared from a Press conference at the B.B.C., the present phase is considered to be one of preparing well over a hundred million oppressed people, of building them up, of causing them to "think freedom," of weaning them from such resignation to Nazidom as may have taken root. "The V army must be disciplined. When the moment comes, it will act in such a way that the Germans are powerless. But wait for the word." In point of fact, nothing less than a revolution by radio throughout Europe is dangled as the ultimate objective. The thing is to wait for the crest of the wave and for the word "go" from the military authorities.

A revolution by radio! How Marconi's one eye would have twinkled, as I caught it twinkling in Rome in 1917 when he learnt what we were trying to do with "aeroplane wireless intelligence" in France. That goes under the head of radiolocation now. Radiolocation and Radiolocution. A moot point as to which gives the bigger opportunity. Only there is, of course, the difference that one is overwhelmingly dependent on gear and the other upon man.

About that injunction "wait for the word," for instance. Can it be intended that the V campaign shall not venture beyond mental preparation and the inscribing and tapping of V's until "a hundred million are ready to go over the top"? Preparing the Continent so that it may decisively coalesce at first sign of Nazi disintegration, or of Allied resurgence, constitutes the undisputed final goal. But a deal else can be essayed in the meantime. This is a period when country can be set competing against country to show the best V results. When Norway puts up a particularly stout effort (or X or Y or Z), then the others should be told about it. To incite them to competition, gradually to get them on their toes, is something worth striving after. For the greater the unifying influence exerted, the stickier it 's bound to grow for the three or four million Nazis spread over Europe.

The other day the International Transport Workers' Union passed an inter-allied resolution in London calling upon all transport workers in the occupied countries to sabotage the Axis transport system. This is the kind of appeal, request or "instruction" which our V campaigners here should incorporate in their movement, assisted by the foreign broadcasters of the B.B.C. And that precipitates another matter: to what extent "Colonel Britton" proposes to use the wireless for giving instructions to his vast V army. What is put into the ether can be picked up by the Germans, too, and there can surely be no intention of telling the Germans how, where and when we propose setting V men and women and children against them.

While the general morale massaging can be entrusted to the ether, specific instructions to the V army must be committed to circulation by other means. As for steering and discipline "over there," they are in the hands of new leaders unknown to the Germans and who must remain unknown. The Germans may bear down on the old leaders. They are doing so already, and it is hard lines indeed. But it won't interfere with the work of the new leaders. These may have been nobodies in normal times. They are materialising now—even as did a Michael Collins—because their personalities suit the covert grimness of the hour.

Such matters as key wrecking and the bumping-off of traitors may lie within the special province of these invisible leaders. Major wrecking is not to be essayed until the moment arrives when it pays the maximum dividend. We who bank on it need to keep in mind what sabotage brings in its wake: shootings, hostages, savagery, and crippling fines. True, I have heard it argued that the Germans are desisting from the fiercer retaliatory cruelties, and General Blaskowitz is quoted concerning Poland: "If we persist too much, we grievously damage any chance the New Order has." Nevertheless, sabotage is not a thing to be lightly asked of any people, when the Germans are around. All we can justifiably do is to remind our friends of the spots in their vicinity, damage to which will do us and them the most service.

As for the troupes of Quislings around, I have long thought that much more could be done by their fellow-countrymen to put the "breeze up" them—not a breeze so much as a hurricane! I only know of one bumping-off, of the pro-Nazi French publicist, Jean Fontenoy. But bumpings there will be, and I think that real progress towards deliverance could be made by initiating them without delay. King Haakon has warned his own Quislings that they are booked for punishment. But that 's hardly enough: these sort of people always reckon on getting off lightly under amnesties. They deserve death now or later, and preferably now, because it would help.

Wrecking and bumping-off are presumably too strong meat for Radiolocution. Yet each week that goes by looks like presenting "Colonel Britton" and his aides with fresh opportunities to widen the embrace of the V. Why not invite resolutions from federations as important as that of Unity House, and communicate the wishes of specific workers here to specific workers abroad? Why not press home, particularly in Belgium, where the food situation is so bad, details of the Allied plan to rush food to the Continent the instant the Nazis crack? Why not tell the French how inertia in Dutch factories has reduced important output to 35 per cent. of that demanded by the Nazis, and inform the Dutch that "raiditis" in the Lille area, or dragging out to hours the taking of cover from the R.A.F., is reducing important production there to 40 per cent of requirements (these figures probably need manicuring, "Colonel Britton," but you get the idea of unification, of competition?).

This V business needs all the guarding and guiding our political psychologists can encompass if it is to bear the fruit they wish. Once in, the thing has got to be seen properly through, or we should have been better off never to have started it. Nothing could be less desirable than a cheapening or misdirecting of the symbol, or that hopes should be lightly raised, only for these to be found to exceed possibilities. The campaign which "Colonel Britton" keynotes could be moulded into nothing less than one whole side of the weapon of political warfare that has thus far been denied us—the side referring to the occupied countries.

The V should be deliberately woven into every act calculated to impede or worry, weaken or jitter the Germans. In this way its prestige may be sustained, whereas if we just keep the V in reserve for a gigantic moment (as seems to be the present idea), if we hold out the prospect of invading under the V, and then don't pull it off, we risk staking all or nothing on the precious symbol.

THE BIGGEST V IN BRITAIN: This fine display of spruce firs was planted in Southern England in the year 1887, to commemorate Queen Victoria's Jubilee. It is the biggest of its kind in the country

b

THE WAR IN RUSSIA

The Latest Pictures from both German and Russian Sectors in the Eastern Campaign

GERMAN TANKS AND INFANTRY ATTACKING THE TOWN OF BRODY: Like a number of illustrations on these pages, the above picture and its description comes from German sources. Readers must therefore make allowance for this fact

THE NAZIS CLAIM THAT THIS PRISONER IS STALIN'S SON: During the fighting near Ljosno, in Russia, a Nazi report stated that Jacob Stalin, son of the Russian Premier, had been captured. This picture, taken in a prison camp, claims to show young Stalin: but there has been no confirmation from Russia that the facts are as stated by the Nazis

A SOVIET WOMAN SOLDIER AS A PRISONER OF WAR: According to the German caption, this woman—still in military uniform—is in a camp in Germany. It is alleged that she was fighting with the Russian forces when captured: but, as yet, there has been no statement that Russian women are serving in the front line!

"GERMAN TANKS ASSISTING IN THE CAPTURE OF A RUSSIAN TOWN": The town is obviously on fire, and the tanks are performing merely a passive role, apparently. The picture is interesting, however, as it shows the type of armoured vehicle used by the Germans in Russia

GERMAN TROOPS ON THE RUSSO-GERMAN FRONTIER: Each man is apparently conveying military equipment and supplies on his back in addition to his pack. Once again—as throughout the whole line—smoke and flames appear to be prominent

THE RUSSIANS RESIST THE NAZI ADVANCE STEP BY STEP IN THE STREETS: The German forces are here seen in the process of occupying a Russian town—but they have yet to win it. Step by step, yard by yard, street by street, the Russians are resisting—thus slowing down the initial impetus of the enemy. The Germans have set up their guns on the pavement, to cover the cautious advance of their infantry up the road, who are proceeding very warily because of possible Russian snipers

SOVIET SOLDIERS COME IN TO THE GERMAN LINES : This is a German picture, and—knowing the German penchant for such things—the scene may have been staged for propaganda purposes. According to the Germans, these Soviet soldiers are "deserters"; and the implication is that they came in of their own will. But the Russians are making similar assertions that great numbers of German troops are coming in to their lines as deserters!

A GERMAN PANZER DIVISION PASSING A DAMAGED RUSSIAN TANK : A scene in the Ukraine where German pressure has been strongest. In this case we should describe the "tank" as an armoured car merely; but this was probably not impressive enough for the enemy! Once again—as in Holland and France—hordes of German motor-cyclists figure prominently in the picture

DURING THE CROSSING OF THE BERESINA BY THE GERMANS : An anti-aircraft gun protecting the German soldiers as they forced a crossing of Russia's most important strategic river. Soviet aircraft carried out many successful attacks during this operation, and German losses were very heavy. The Beresina is the river which figured so largely during Napoleon's disastrous Russian campaign of 1812

THE FRONT-LINE WIVES OF THE SOVIET AIRMEN : The women of Russia are undertaking many tasks in the war. In this picture the wives of the Commanders of a Soviet air unit are seen refilling machine-gun belts with ammunition

THE ENLISTMENT OF VOLUNTEERS IN RUSSIA : Men of every occupation in the U.S.S.R. have flocked to enlist in the popular Volunteer Force. This picture was taken while Soviet scientists, professors and post-graduate students were signing up for war work

COMFORTS FROM HOME FOR THE FIGHTING FORCES IN RUSSIA : Schoolchildren are here preparing a parcel for despatch to a soldier at the front

THE AREAS AROUND BRITAIN AND IN THE MEDITERRANEAN WHERE THE ROYAL AIR FORCE IS ENGAGED in actual fighting or bombing operations, or on patrol

To those of us who consider that the R.A.F. are concerned only with operations over or near Britain, the above diagram-map may come as something of a surprise! It is quite well known that, in addition to air battles over Britain and Northern France and bombing operations over Germany, the R.A.F. have been taking a big part in the Battle of the Atlantic and in Libya. But how many of us have envisaged the number of distinct and separate zones of air activity depicted here? Around Gibraltar and its vicinity; around Malta and the narrow waters; off Crete and the North African coast; around Cyprus; over Palestine and Transjordan; around Bagdad and the Iraq area—in all these places the aircraft of the Royal Air Force are active, each day and every day. And then there are—nearer home—the Norwegian patrols, the aerial guard over the Shetlands, the Faroes, Iceland! Should we bring all these aircraft home, just to bomb Berlin in great force? Should we abandon our scores of different spheres, just to be vindictive? Let us be thankful that the R.A.F. has never hesitated to take on its many and far-flung duties!

BRITAIN'S FAR-FLUNG AIR FORCE

Like the Navy, Britain's Air Squadrons are Spread all Over the World, and Performing Vital Tasks Over Three Continents

By A. B. AUSTIN

"GERMAN air superiority," says Mr. Churchill, "has been broken."

When he made that cheerful statement in the House of Commons, the Prime Minister must have been thinking of this island. He must have meant that no longer could the *Luftwaffe* expect to fly in superior numbers over our coasts.

He could not have meant that wherever the R.A.F. flies, from far out over the Atlantic to China, from Iceland to Africa, it now has sufficient bombers and fighters and flying-boats for all its war-winning jobs. Because German air superiority has been broken, it does not follow that we have yet established that crushing air superiority which would give us command of the enemy sky over any battle-front on land or sea.

Imagine a conference between Air Chief-Marshal Sir Charles Portal, Chief of the Air Staff, and his Commanders-in-Chief. The Chief of the Air Staff is thinking of the whole air war with all its strains and stresses, of all the aircraft and air crews and reserves at his disposal, of the demands of the War Cabinet, and of Hitler's next move.

The Chiefs of the Fighter, Bomber, Coastal, Middle East, Indian and Far East Commands are thinking of their own widely differing needs. Somehow these claims have to be adjusted.

It might be thought, for instance, that the Commander-in-Chief of the Fighter Command, Air Marshal Sir William Sholto Douglas, had a comparatively simple problem. His predecessor, Sir Hugh Dowding, who won the Battle of Britain, began that epic struggle with a few hundred fighter pilots. Since then the Fighter Command has more than doubled in strength and is still growing.

But not by any means all of our new fighter squadrons could be thrown at once into a new Battle of Britain. Many squadrons have gone to build up a strong night-fighter force, with different types of night fighters for use both at home and across the Channel. "Sweeps" over France may detach many more from their purely defensive job. Others protect shore-hugging convoys. And there is still the great triangular goal, from the Orkneys to the Straits of Dover and Land's End, to be kept. Not all fighter squadrons have the new Spitfire Mark 5, capable of dealing with the latest Messerschmitt 109F at stratospheric height.

The development of the long-range fighter squadrons, equipped with the fast, twin-engined Beaufighter, hitherto used for night fighting, must be hurried on. That also diverts from the total defensive strength of the Fighter Command, but is essential if our fighter-protected day bomber "sweeps" are to be extended over Germany.

Air Marshal Sir Richard Peirse, Bomber Command Chief, is a man with an almost insatiable appetite for bombers and air crews. Until Germany collapses he can never have too many.

Whereas his opposite number in the *Luftwaffe* had a comparatively limited target when he concentrated on this island, Air Marshal Peirse has an unlimited choice and range of targets. He knows, too, that he can only keep up the strongest and most unbroken bomber attack if bomber crews, like fighter pilots, are regularly rested. The effective front-line strength of an air force is the number of fresh, rested pilots and

THE MEN WHO SWEPT THE ITALIANS OUT OF THE SKY: Tomahawk pilots enjoying a chat and swopping experiences on returning from a successful operation in the Western Desert, where both Italians and Germans have been operating.

AN AMERICAN AIRCRAFT NOW MUCH USED BY THE R.A.F. IN THE EAST—The Curtiss Tomahawk : Numbers of this type are now in service in the Western Desert and in other parts of the Middle East. Details of the armament and performance of this aircraft have not yet been released for publication ; but it is said to be one of the fastest in the world

newly-overhauled aircraft immediately available. Had the Germans known how desperately few fresh fighter squadrons were at Sir Hugh Dowding's disposal after Dunkirk, they might have come over and won the war at once.

Air Marshal Peirse needs bombers for several different kinds of work—for high- and low-altitude bombing, for night and day, long- and short-range raids. He has to think of the Nazi-controlled French factories, of the warships at Brest, of all the munition centres from Cologne to Berlin, of the shipyards, air factories, and ports from the Baltic to the Spanish frontier which build or shelter the U-boats and Condor planes for the Battle of the Atlantic.

That battle is the first concern of the new C.-in-C. of the Coastal Command, Air Marshal Sir Philip Joubert. His Command is misnamed. The Fighter Command is the real coastal affair. Air Marshal Joubert's pilots hunt U-boats and guard convoys thousands of miles out over the Atlantic. They scan the Norwegian fiords from the North Cape to Stavanger. They range from Iceland to Gibraltar.

If the Battle of the Atlantic spreads much further south, and the U-boats and Condors operate from Dakar and Casablanca, the Chief of the Air Staff will have to spread his force still further. Sunderlands, Catalinas and Hudsons which might have strengthened the Coastal Command further north may be found scouring the South Atlantic from West African bases.

THE R.A.F. IN SYRIA : Air Commodore L. C. Brown, D.S.O., A.F.C., who commanded our Air Forces in Syria during the campaign against Vichy France

The Mediterranean was not so puzzling a parish when Wavell's men had pushed the Italians back along the Libyan coast as far as Benghazi, and seemed to be about to push them further.

That would have given the Middle East Command more bases from which its fighters could protect the Mediterranean Fleet. So long as Germans and Italians are on the Egyptian frontier, and Germans hold Crete, the task is difficult. An increasingly strong force of bombers and fighters is needed to smash the *Panzer* divisions in the Western Desert. If and when they are smashed, the Libyan air bases will be regained. Only by so doing can the Fleet be given that protection from the air which allows it to support fully our army advancing along the coast. Nowhere in this war are Army, Navy and Air Force more inter-dependent than on the north coast of Africa.

Round the corner in Palestine, Syria and Iraq the problem has become a little easier. Since the crushing of the Iraq revolt, and the conquest of Syria, there are plenty of air bases. But aerodromes are no use without aircraft. To make Palestine, Syria, Iraq and Cyprus quite secure, as strong a force of fighters is needed as can possibly be spared.

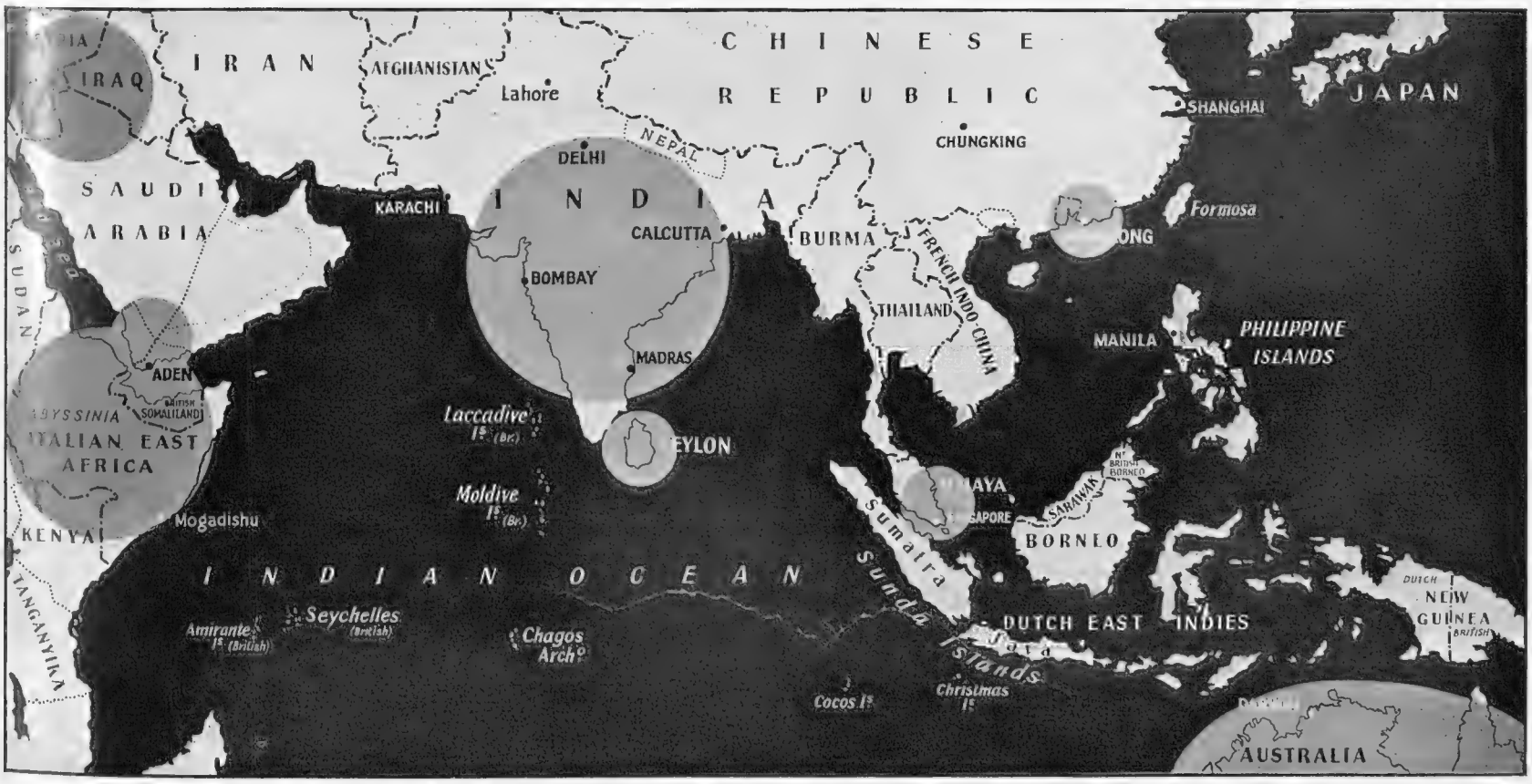
If long-range fighters can be had, so much the better. They would help the bombers—and the Eastern Mediterranean Fleet—to interfere with the Axis supply ships passing from Greece and Crete to Libya. The Italians claim to have shot down a Beaufighter off Malta, so perhaps the provision of long-range fighters has begun.

Air Marshal Sir P. H. L. Playfair, in India, and Air Marshal C. W. H. Pulford at Singapore also need as many bombers and fighters as can be spared to them. True, they have no active war on their hands, but Air Marshal Playfair has to keep an eye not only on possible threats from the north should the Nazis have better success in Russia, but on the Persian oilfields as well. Air Marshal Pulford, R.A.F. C.-in-C., Far East, has a Japanese air force establishing itself over against him in Indo-China.

Hitler knows that, with American help, nothing can stop the R.A.F. gaining final superiority in every part of this world-wide air war. But he also knows that he has the advantage of easy internal lines of communication. If his Russian campaign were successful, he could swing his *Luftwaffe* quickly to west, south, or further east. We have to carry our short-range fighters by ship round many thousand sea miles.

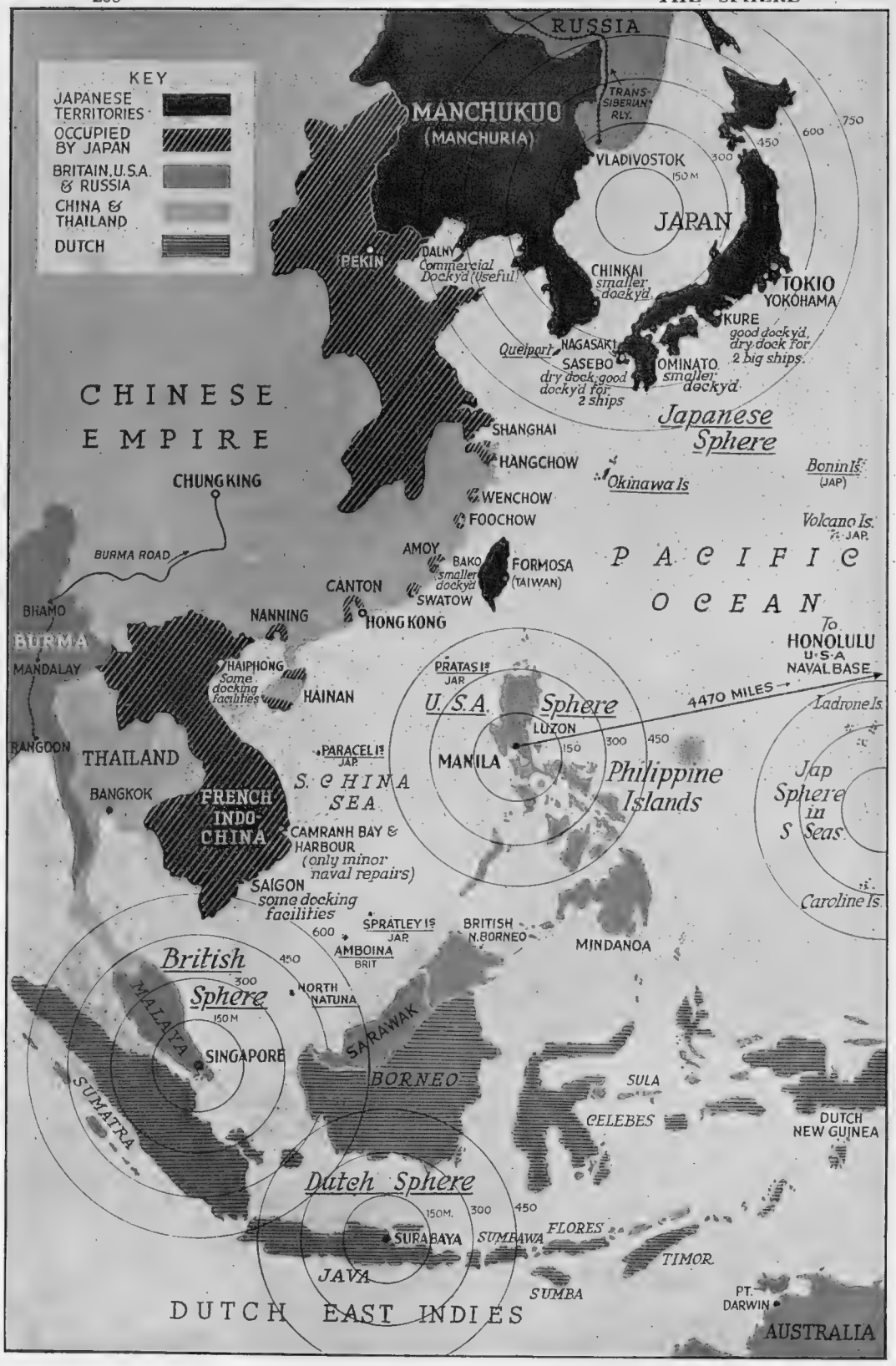
That is why Hitler, playing for time, seeks to thin out the R.A.F., to stretch it as far as possible, to load it with more responsibilities, east, west and south, striving to postpone the day when every R.A.F. Command will be absolute master of its own skies.

THE RECENTLY-APPOINTED A.O.C.-IN-C. IN THE MIDDLE EAST : Air Marshal Tedder (in centre with jacket on his arm) went out to Cairo as Deputy to Air Chief Marshal Sir A. M. Longmore in place of Air Vice-Marshal Owen Tudor Boyd, who was brought down over Sicily by the Italians whilst flying out to the East. He succeeded to the Chief Command on Sir A. M. Longmore's return to Britain a short while ago. In his tours of the Middle East, Air Marshal Tedder uses an American "Lodestar"



IN THE FAR EAST, TOO, THE R.A.F. AND THE R.A.A.F. ARE AT WORK, EITHER FIGHTING OR PATROLLING

Apart from East Africa, the R.A.F. in the areas outlined above are engaged on patrol duties. The cessation of hostilities in Iraq and Syria has released fighter and bomber pilots from actual wartime duties, but our forces still occupy those areas and air support has, therefore, to be held in reserve for them, though in reduced numbers. Now that Japan is making threats of aggression in the Far East, our flying personnel have been augmented in Malaya and at Hong Kong. India, of course, is an area all on its own—so far ; although here, too, the R.A.F. is on a firm war footing. Whilst in Australia, the air defence of that continent is in the hands of the R.A.A.F.—and it could not be in better !



THE MAIN SPHERES OF INFLUENCE IN THE FAR EAST: Off the Far Eastern shores of the Asiatic Continent, Japan plays a very decisive part—but she is not the only factor in the Eastern strategical situation. Lying off the Russian Siberian coast, she has already made Manchukuo her own; by occupying a large part of China and most of the south Chinese ports she has further strengthened her position. Her latest move has carried her to the south—to French Indo-China; and it is here that there is a clash of Japanese and British-American interests. The United States wield a great influence in the Philippines; just as the British do in Malaya, and the Dutch in the East Indies. So that with Russia to the north and the British-American zones to the south, Japan would have her hands full in any conflict with those Powers. Nor must we forget China, which is still unsubdued after years of warfare. In the drawing above the position of the Burma Road is indicated: this route into the heart of China is thought by many to be one of the reasons for Japan's present move into Indo-China, so easily yielded up by the defeatists who now control France's destinies

How GERMANY has Worked on JAPAN: But Japan herself has yet to Decide her Own Destiny

By HERMIONE BEAUCLERK

themselves out, ranges of mountains blanketed with the rose petals of sunset clouds, and creamy torrents swirling between dark rocks, which had been my companions for many weeks in the Hitaka mountains. I felt, rather bewildered, the crowds of uniformed porters, newspaper boys and sandwich sellers, each with their differentiating hat bands, and passengers jostled past me, shouting and whistling.

A friend of mine, a Japanese, had come to meet me. He whirled me away in a taxi without my knowing where we were going. When we pulled up at a big American department store, I followed him in passively. We shot up to the third floor in the "stream-lined elevator," and he led me to an exhibition there called "The Horrors of War."

I came down to earth "with a bump." There was something stirringly grotesque about the crowd of small, bright-eyed chattering people pulling gas-masks over their piled-up hair, fingering lethal weapons, and gazing at pictures and photographs of death and destruction. They were evidently not a bit impressed with the "horrors." It was a new game, a new experience. They were inquisitive and amused—and they wanted to play. Later, my friend, who had helped to organise the exhibition, told me that it had been "on tour" throughout Japan, and that its purpose, far from instilling a fear or loathing of modern warfare, was to accustom the people to its instruments and to arouse that very curiosity and desire for experiment in it which I had noticed. The exhibition was a great success.

My visit to Japan, which had begun as a pilgrimage to beauty and a palliative to "traveller's itch," was thereafter tainted by a note of sinister anticipation. Coming, as I had, from British colonies and outposts, the "Japanese question" was, of course, no new one. The over-population of Japan, which I had heard graphically described as "so great that the people are pushing each other over the rocks into the sea," was a matter of which I had heard many theoretical but no practicable solutions, and I was far too un-politically minded to take any very great interest.

But during the next month or two, while I travelled throughout the country, visiting the shrines and the cities, the pleasure resorts and the industrial centres, I realised more and more that Japan's intentions, from an international point of view, were strictly dishonourable. I soon discovered also that there was more behind the grudge

THE NAVAL SITUATION IN THE FAR EAST: It is true that the Japanese Navy is strong, but, in the event of hostilities, this Navy could be beset by the combined fleets of three Powers—Britain, America and Russia—aided by the not inconsiderable Dutch Fleet based on the East Indies. The United States pressure would come from Honolulu and from Manila; whilst to the south the strong fortress of Singapore would be the base for the British Navy, to check any further extensions to the south towards Australia

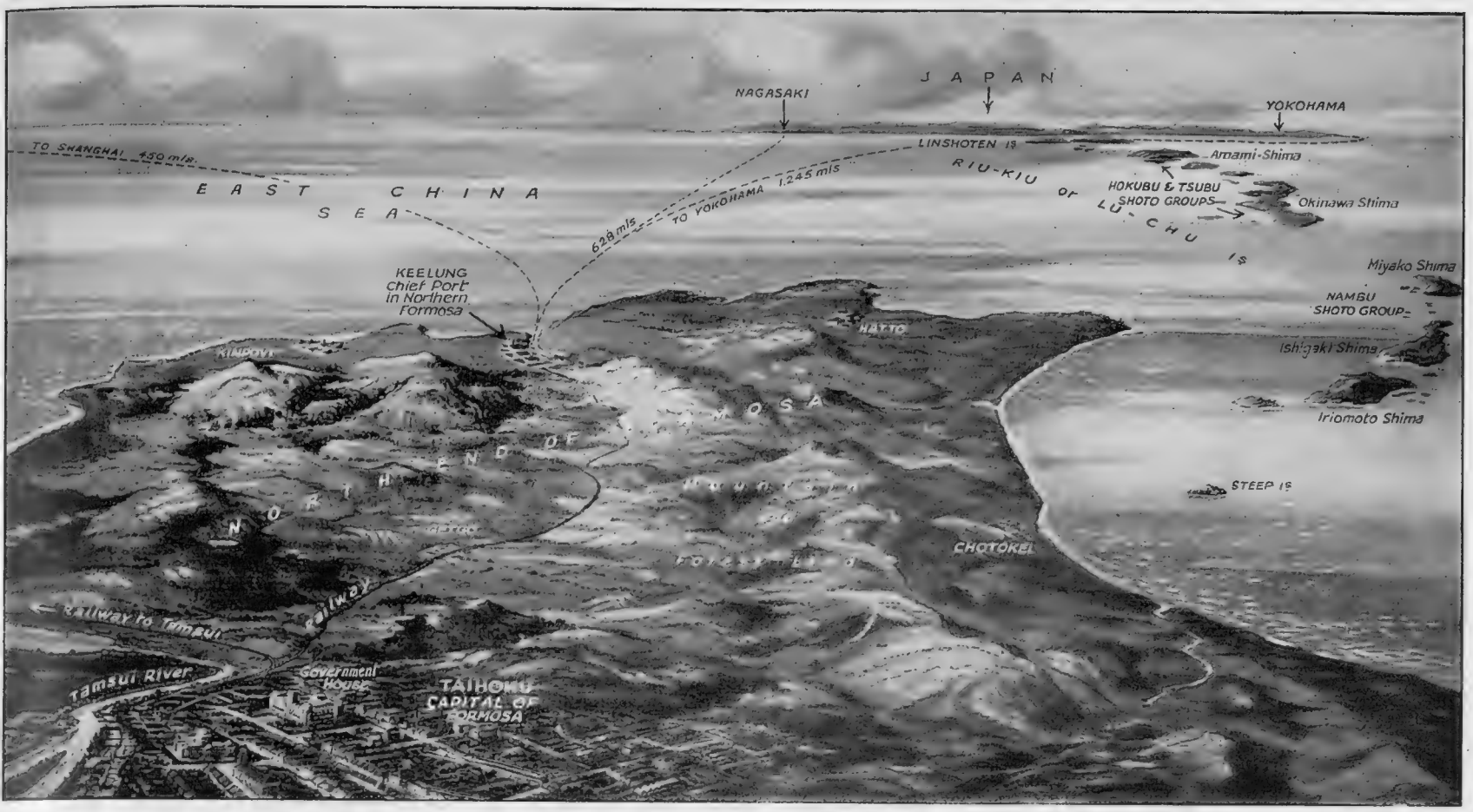
". . . AND Japan?"

"Very small. . . ."

Yet not so small as to have escaped the machinations of Nazidom, and large enough for politicians of every nationality to have to keep a weather eye aware of Japan's activities. Large enough to have overrun Korea and Manchuria, Formosa and the Peninsula of Karafuto; to have been for four years at war throughout the eastern half of China; to cast lustful eyes at most of Asia, and to be embarking now on a second war, against the eastern flank of Russia. Large enough to contain a population of 69,250,000; so crowded in its habitable areas that there is little land free from the design of brown houses, gardens and fields. Large enough to account for trade depressions and gimcrack products over most of the world. A remarkable country in its ambitions, its achievements and its natural beauty.

It is seven years ago since I alighted from a train into the methodical hurly-burly of Sapporu station, in the northern island of Hokkaido. My eyes were still focused for the grand scenic effects of huge forests, vast, greenish lakes in the craters of volcanoes which had burnt

THE MAIN GATEWAY INTO MANCHURIA—DALNY: Formerly owned by the Russians, Dalny is now the main gateway into Manchukuo from Japan. It was leased to Russia in 1898, but was ceded to Japan by the Treaty of Portsmouth in 1905. It has a good harbour, protected by a breakwater 1,000 yards long; and this picture shows one of its larger docks



THE ISLAND OF FORMOSA, off the Chinese coast, which lies some hundreds of miles south of Japan proper *Drawing by E. G. Lambert*

This big island is some 650 miles south of the main Japanese group. In the event of war it may prove a larger asset in the Japanese war effort than many people might imagine. Formosa was wrested from China in 1895 at the conclusion of the Japan-China war; and thereby Japan rose to the rank of a Colonial Empire with the big island as its first overseas possession. It is 244 miles in length with a maximum width of 76 miles: its area of 14,000 square miles makes the island a trifle larger than Holland, a little smaller than Switzerland, and more than twice the size of the Hawaiian Islands. It has a coastline of 700 miles, and possesses thriving ports and cities—some of them surprisingly modern in construction and appearance. Ever since its acquisition by the Japanese, a certain measure of secrecy has surrounded developments on the island. Undoubtedly it is a source of great wealth for its new owners, despite the primitive character of the native population—it is, for instance, the principal source of the camphor supply of the world; its timber supplies are almost inexhaustible; and it is rich in mineral resources of all kinds. The principal city is Taihoku, the administrative seat and the capital: this is a semi-Asiatic city with wide streets and a rapidly growing population of around 100,000

against the other Great Powers than the inevitable restlessness of an over-populated adolescent country, and that some of the Great Powers were notable by their exemption from blame. I discovered colonies of Germans, comparatively recently arrived, yet "gone native" as Germans so easily will, fostering disquiet among the youths of Japan's new middle class. I noticed the bitterness and resentment and distrust of Germans who had lived long in the country against the activities of those compatriots. The Nazi technique of creating an inferiority consciousness in small nations, and then pandering to it, was new to the world then, but it was in full stride in Japan as long ago as that.

Yet in some ways, the Germans must have found the Japanese difficult to contend with. The Japs have a disarming way of listening to everything they are told with the most serious courtesy and respect, agreeing with every word, professing the same opinion, and then, by a chance remark, or more usually through another person, of letting one know that they not only did not believe a word, but that they were surprised that you thought or expected that they had! An endearing quality in many ways, but baffling to an apostle! Communication of thought is difficult between the Japanese and foreigners, and, without the nuances and subtleties of their own language, almost impossible, for they consider simplicity of expression stupid, and truth does not rank among their virtues. They are far too polite to attribute truth to any of their friends!

At the sacred Islet of Ise, joined to the mainland by a broad bridge with an immense *torii* and an avenue of huge cryptomeria, are the Shrines of the Imperial family. The Crown Prince, returning from foreign travel, pays homage there before resuming residence in Japan. One bright hot day, he, escorted by nearly the whole Japanese Navy, sailed into the wide bay near by, and, while he paid his respects, those of the assembled crowd who did not follow him, rowed out in small boats to get a nearer view of the ships. The trippers were not allowed very near to the ships, for tremendous secrecy lies

HOW THE JAPANESE HAVE MODERNISED PARTS OF FORMOSA: This new motor-road, constructed on the most modern lines, now runs along the eastern coast of the island for a length of 121 kms.

THE HARBOUR AT NAGASAKI ON THE WEST COAST OF JAPAN: The bay, or harbour, is one of the best and deepest in Japan; it is a large and commodious inlet completely surrounded and sheltered by green hills on which are gun batteries. As the nearest port of importance to both the Manchukuo and Chinese coasts, Nagasaki has always had a great commercial value. Of recent years a veil of secrecy has been drawn over any naval developments at this spot. Its strategic importance, however, will be obvious after even a brief reference to the map

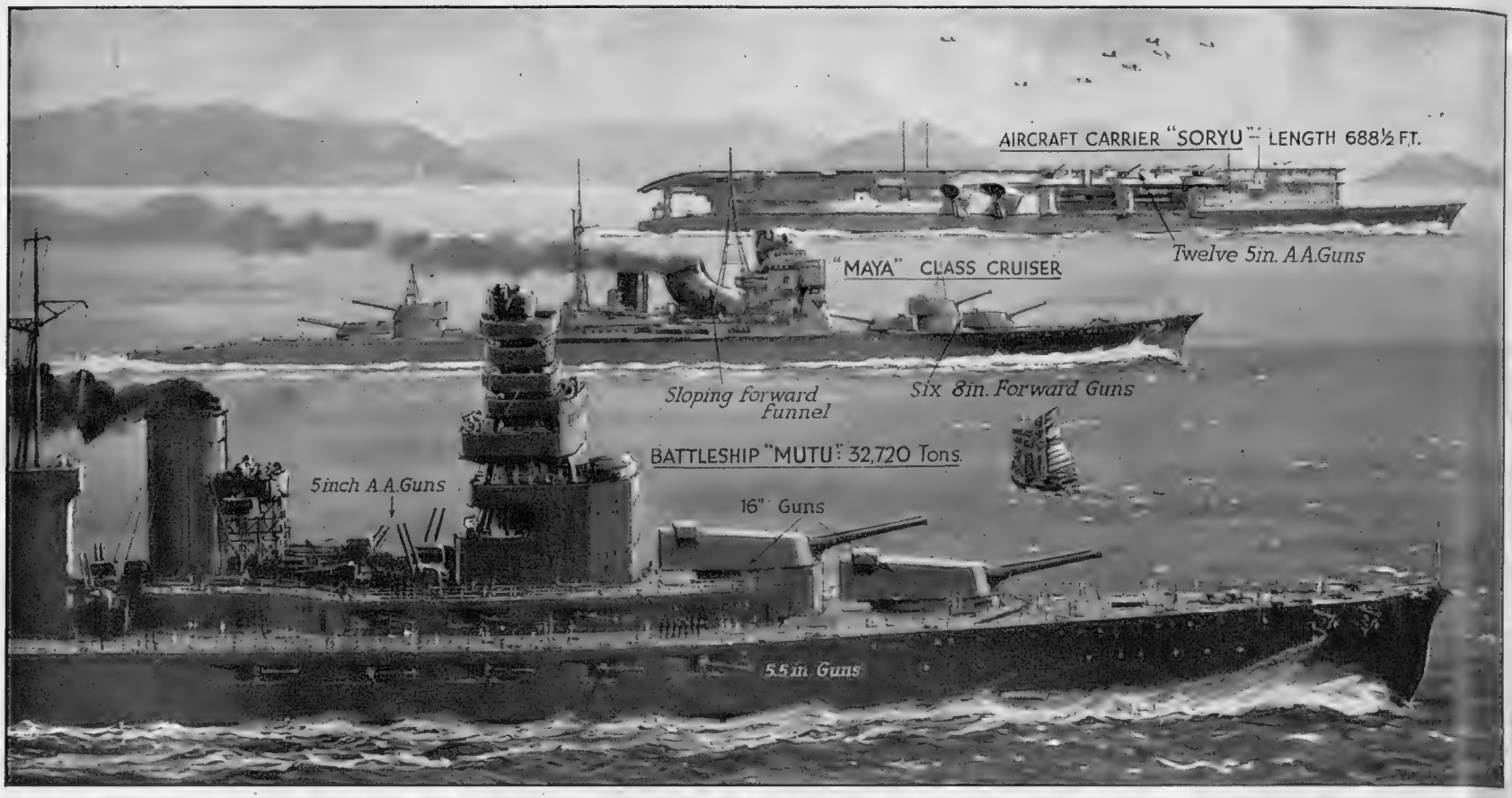
over all their war and defence preparations. But a motor-boat, from an anchored steam-yacht in a neighbouring bay, chugged proudly up to the flagship. It bore a German flag.

Japan, who like every other country must have a perpetual eye open to the main chance, has long been nursed by the Nazis. She has gained much strength from them, just as she gained wealth, education and civilisation from America before. Britain and America have much to lose from too great Japanese strength, so naturally she looks on those two countries as her greatest potential enemies. But Japan makes no pretence to loyalty. If she believes that she has sucked dry the orange of German Alliance, she will not hesitate to change her plans—if she dares.

She already has wars on foot in Indo-China, Siam and China. Her politics are getting rather too involved even for the Japanese! She is in the midst of an industrial revolution at home. One cannot envy her. One cannot like her. One might use her. And by using her now, one might save her from the dangers and disasters for which her present course is heading. Germany's New Order has as little room for a rival Power in the East as in the West.

Germany is already using her to weaken the strength of France (in the Indo-Chinese campaign), and at the same time to dissipate the wealth and energy which might prove a future threat to Germany, for Germany is a pastmaster at the game Japan has learnt so recently to play. The thousands of Japanese who spent a few years in America or Europe—long enough to learn the "tricks of the trade," the veneer of western civilisation—and then hurried back to impose those easy manifestations on their own country, have suffered themselves the disillusion to which they have led their country. Now they are chasing after another get-rich-quick mirage; but they are being replaced by another generation on whom the traditions of the New Japan will rest.

That this generation should be able to tell the gold from the glitter is of the utmost importance to Japan herself and to the whole world. No effort is too great if it can in the end help Japan to choose aright.



THREE TYPICAL EXAMPLES OF THE BIGGER VESSELS INCLUDED IN THE POWERFUL JAPANESE NAVY—*Drawing by W. McDowell*

The battleship *Mutu* is one of the most modern of Japanese battleships, yet she was completed as far back as 1921, as a sister-ship to the *Nagato*. *Mutu* has a displacement of 32,720 tons, and was extensively reconstructed in 1934-6 : she carries eight 16-in. guns and twenty 5·5-in. guns, as well as eight 5-in. anti-aircraft guns. She carries a complement of 1,332. The first-class cruiser *Maya* was completed in 1932 : she is a vessel of 9,850 tons and has a complement of 692. Armed with ten 8-in. guns, *Maya* has a speed of 33 knots. She has a curious front funnel of sloping design a purely Japanese characteristic. The aircraft-carrier *Soryu* is a vessel of 10,050 tons which is unofficially reported to have accommodation for 30 to 40 aircraft and to be fitted with gyro-stabilisers. The Japanese Navy is strong in vessels of this type

A Japanese destroyer of the post-war KURI class, designed during a period when the Japanese were copying German ideas of the late war, in preference to the British designs which they had favoured until then. Latterly they have been working on purely Japanese designs, breaking away from European traditions whenever possible even to the extent of deliberately seeking the bizarre

Japanese cruiser *ISUZU*, one of the very numerous post-war cruisers of moderate size which are regarded as being particularly useful for work on the Asiatic coast and down into the East Indies. In order to mount seven 5·5-in. guns singly, for the purpose of more rapid fire than is possible with double mountings, the forecastle guns have had to be placed back to back

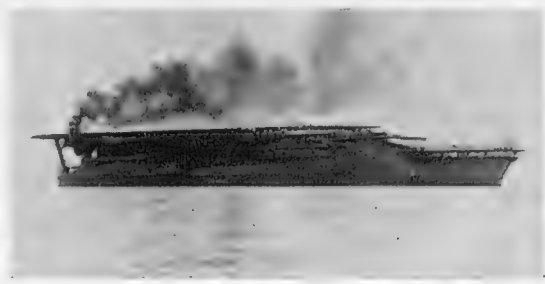
The Japanese destroyer *OITE*, which demonstrates the transition stage during which the Japanese were breaking away from European principles and groping for entirely new ideas of their own. "Oite" means "a fair wind"

The Japanese battleship *NAGATO*, 32,720 tons, showing the manner in which the control platforms were piled up to the detriment of stability. The curved forward funnel seen here (to keep away the boiler gases) has not proved a success

The Japanese cruiser *HURUTAKA*, of 7,100 tons, showing the characteristic lip bow only to be found on Japanese ships. She is one of the ships which proved dangerously unstable until rebuilt

The Washington-type cruiser *ASIGARA* : seamen who encountered her at sea on her way to King George's Coronation Review reported that she behaved very badly in very moderate weather

The battle-cruiser *HIEI*, the last Japanese warship to be built on British plans supplied by the great firm of Vickers, but considerably modified in external details



Aircraft-carrier *KAGA*, converted from an uncompleted battleship under the Washington Treaty : this did not prove a success, and she was later considerably altered

JAPAN'S POSITION IN THE PACIFIC

Described by FRANK C. BOWEN

THE action of Japan in Indo-China has caused no surprise in the Democracies, for they have been preparing for it for months, and this absence of surprise robs it of many of its dangers, although its possibilities are naturally very serious. Japanese politicians apparently consider that Russia will now have her hands too full with her own war to spare China the munitions which she has been supplying until now. On the surface, the control of Indo-China gives the Japanese a treble advantage : to the north it leads them straight into South China ; to the west into Siam and to Burma itself ; and from the naval bases on the east coast they can threaten the Dutch East Indies, with their natural wealth, the flank of the Philippines, Singapore and Australia.

The concentration of Japanese troops in Formosa has been an open secret, and the run from the island to the Philippines is a short one. But even supposing that the American naval and military forces in the Philippines are weak—and they seem to be strongly held—they would have a difficult task to occupy more than the ports China has proved that the Japanese soldier is at a great disadvantage in guerilla warfare, and the warlike Filipinos are masters of that, beside hating the Japanese with a bitterness which the easy-going Chinese seldom trouble to attain. As a permanent feature in Japan's dreams of a Pacific dictatorship, the islands would be invaluable ; in war their possession would be a liability, and probably a serious drain, but to leave them would be very dangerous to any major naval operations in the China Sea.

Some, but not all, of the minerals of the Dutch East Indies are within easy reach of the ports, but most of the coveted oil is well inland, protected by miles of jungle. A Japanese landing, even by parachutists would leave plenty of time to destroy the wells and the refineries which are even more important, as the crude oil is of little use to the Japanese, with their lack of refining facilities.

No overseas operations would be feasible with Singapore "in being" on their flank, and that fortress would need a great deal of reducing. Much has been made of Japan's success in reducing Port Arthur in 1904, and Tsingtao in 1914, but the truth is that her forces, although they were successful in the end, did not exactly shine on either occasion, and their faults were obvious to the staffs of the world, although carefully hidden from the public by clever propaganda. The price of reducing Singapore, if it were ever contrived at all, would be colossal, and Japan's best troops have already been expended in China.

If Japan intends to use Indo-China as anything more than a land approach to the China fronts, as she certainly seems to, her traditional naval policy—to save material at almost any cost, no matter how recklessly human life may be sacrificed—will have to be revised. The staff of the Navy will have to face some very difficult problems and, although the fleet is admittedly strong, its resources would be strained to the utmost. Its known battle-fleet

consists of ten units, for the battle-cruiser *Hiei*, which was demilitarised under the Washington Treaty, has certainly been restored. Four new 40-000-tonners, armed with 16-in. guns, were laid down before the outbreak of war, but the country is so very short of steel that it is unlikely that they have been completed. The aircraft-carrier fleet consists of two large ships, getting to the end of their days, and five small. The cruiser section is a large one. There are two big ships mounting 12-in. guns, which are probably complete by now, although their construction has been shrouded in the greatest secrecy. Eight 8-in. gun "Washingtons," four smaller 8-in.-gun ships, certainly six big 6-in.-gun ships, and probably nine, seventeen smaller cruisers of post-war construction, and several old. The Axis badly wants the services of these cruisers to harass Australian and British interests in the Pacific, and to make us dissipate our naval energy to deal with countless "nuisance raids." There are between eighty and ninety good destroyers, and many old ones and torpedo-boats. The submarine fleet has probably been enlarged since they started their policy of absolute secrecy, and may number ninety units or more; it is one of the most efficient branches of the Navy.

Drawing by W. G. Whitake:

ONE OF JAPAN'S CRUISERS—the 7,100-ton "Hurutaka," leaving the harbour at Nagasaki

This vessel was completed at Nagasaki in March 1926: with an over-all length of 595 ft., she carries a complement of 604 and is armed with six 8-in., and other, guns. Noteworthy features introduced in these ships are the undulating deck-line, the unusual bridgework and masts, trunked and heavily raked funnels and angled hull form. As originally completed with six single turrets, *Hurutaka* (and her sister-ship, *Kako*) proved deficient in sea-keeping qualities. They were therefore rebuilt on similar lines to the two later ships of their class in 1938-9

TOKO MARU, a tanker built with a generous subsidy, giving her very much more than the economical tanker's speed in order to make her more suitable for naval purposes. Some of these ships have had a trials speed of 19 knots and over, but very few of them have touched that speed on service

A big fleet, but not too big if, in addition to Britain and Russia, Japan is to challenge the U.S. Navy of fourteen efficient battleships and three old ones, five big and two small aircraft-carriers, eighteen 8-in. and twenty-five 6-in. cruisers, over a hundred up-to-date destroyers, and fifty-odd first-line submarines with a large second line. And many more of every type are being built as rapidly as possible and completed every week.

No matter what large-scale operations the Japanese Navy may undertake towards the south, a large covering fleet will be demanded as an ordinary precaution. If the Dutch East Indies are attacked in force, a start must be made on the comparatively small section accessible from the China Sea, and, apart from the American ships which may be in the Philippines or further west, it will be necessary to detach a considerable number of capital ships and large cruisers, with small craft and submarines, to cover Singapore, and the British ships which might be sent to it from the west, and which might fall back on it from the east. If they aim

(Continued on following page)

Drawing by Montague Dawson

THE BRITISH NAVY IN THE FAR EAST: A cruiser of the County class, starting out on patrol, passes a Chinese junk decorated in traditional fashion on its high stern

Throughout Eastern waters the junk is the universal vessel: its high forecastle and stern, and its square matting sails give it a clumsy appearance, yet it is a seaworthy craft. Many of them, in fact, are of very large size, their tonnage sometimes reaching 1,000 tons. Junks have even been known to undertake the voyage to America, and to Europe. Their gaily-painted sterns and the eyes at the bow, are traditional decorations. The County class of British cruisers was well represented at the engagement with the *Bismarck*: somewhat similar to both the London and the Kent classes, these vessels have a speed of over 32 knots. They would be admirably suited for operations in the Far East

A BRITISH CRUISER IN THE GREAT FLOATING DOCK AT SINGAPORE

This is one of the first pictures ever released showing the huge floating dry dock at our naval base in the Far East. The dock was built at prodigious cost, and it is capable of accommodating some of the largest war vessels of the British Navy. Its size can be gauged from the amount of space still remaining after a fair-sized cruiser has entered! It is likely that, in the event of war with any Eastern Power, the United States would share the base at Singapore with our own Fleet

ON THE ALERT IN THE FAR EAST—Scottish troops in Malaya: The above official photograph shows members of a famous Scottish Regiment on manœuvres in Malaya. The soldiers are demonstrating how they have adapted themselves to the conditions of warfare which would prevail in that part of the world by cutting their way through jungle country and mangrove swamps such as this whilst carrying full equipment. The advance party of pioneers are here going ahead to fix the safety line across the river

THE ARRIVAL OF THE AUSTRALIAN INFANTRY FORCE IN SINGAPORE: The soldiers fraternise with native members of the Malay Navy

JAPAN'S POSITION IN THE PACIFIC (*Continued*)

at taking Singapore with its magnificent defences, they must send down practically all their heavy metal and be prepared to face protracted operations and big losses.

A capital ship damaged in action demands very elaborate docking facilities. Camranh Bay, which the Japanese have obtained from Vichy, is a magnificent harbour and fine operational base, but it cannot carry out major repairs to big ships, and the docking facilities at Saigon and Haiphong are not very good. The Japanese harbours towards the south, and in the mandated islands are not equipped as dockyards, and are unsuitable for anything more than temporary bases; they are usually only lightly protected with medium-gun forts, although well mined. Big ships that were damaged would therefore have to be towed north to one of their regular dockyards, and would provide magnificent targets *en route*. From Singapore to the major dockyard ports in Japan is nearly 3,000 sea miles, and to average four knots towing a badly damaged battleship is good going. Once safely home, the repairs could be carried out quickly; there are magnificent dockyards to deal with big ships.

An attack in force on Australia and New Zealand across the open Pacific, an operation in which the possession of Indo-China would be of little assistance, would also involve facing great difficulties of distance, although there is no doubt that Japanese naval officers in the pearling luggers working off the northern coasts of Australia have made most elaborate charts, which would be most useful in small-scale raids, which could cause infinite trouble, and tie up a lot of troops and ships.

If any considerable proportion of the battle-fleet is sent south, it will leave Japan itself open to attack by the United States Pacific Fleet from Honolulu. The Inland Sea may be regarded as impregnable to surface ships, difficult to submarines, but vulnerable to aircraft. Japan has not known an attack in force since the Middle Ages, and with the coolie class seething below the surface, as it is known to be at present, the effects are incalculable. With the highly inflammable nature of most Japanese houses they are particularly fearful of air attack, and the U.S. carriers, with a strong escort which could also undertake bombarding work, could cause great havoc.

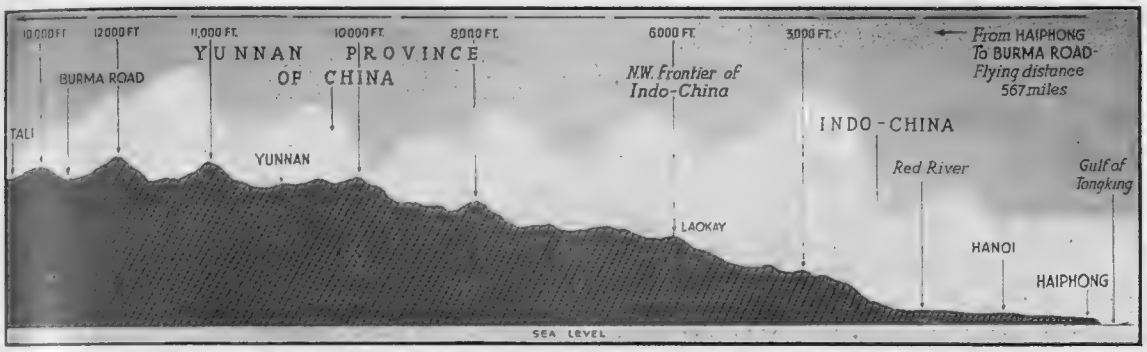
British North Borneo and Sarawak would be side issues in a Pacific war, at least in its early days; their possession would not be valuable to Japanese military operations, and any diversion of their forces would be dangerous, but they would probably suffer from raids and Fifth Columnists. Any naval operations among the maze of East Indian islands would demand an immense number of the smaller types of ships, from destroyers downwards, especially since the Dutch are reported to be completing nearly 400 motor torpedo-boats there, and are supplied with huge numbers of mines. But these vessels would also be badly needed in home waters to check Russia's large fleet of small submarines at Vladivostock, and they are still demanded in China.

Japanese submarines would naturally be active in all areas, and many of them have a large radius of action. Generally speaking, the East China Sea is deep, and for submarines its conditions are akin to those of the Mediterranean, but with more bad weather; the South China Sea is shallow, with conditions more like those of the North Sea on a larger scale. Their powers of mischief are not underestimated, and they can easily be kept going by depôt ships in an extemporised base without proper docking facilities; but the Democracies, especially the United States, have plenty of defensive material, and many factors would favour Allied submarine operations against the long Japanese lines of communication. As sailors, the Japanese are admitted to be among the finest in the world, but not as gunners. They may have improved with practice, but in the early days of the Chinese campaign, when our Navy was in a position to observe, their bad shooting was a revelation.

A NEW "SCOUT" FOR AMERICA'S FLYING FLEET: In the Pacific, the American Navy relies very largely on its scouting (or, as we should say, reconnaissance) aircraft. They now have a new "Scout" plane—the Vought-Sikorsky OS2U,I. These are adaptable as land planes or as single float planes for use as catapult aircraft aboard battleships or cruisers. Their duties consist of observation and long-range scouting missions, as well as the important task of directing the gunfire of surface ships. Their specialities are low landing speed, long range, and excellent vision

Drawing by L. Ashwell Wood

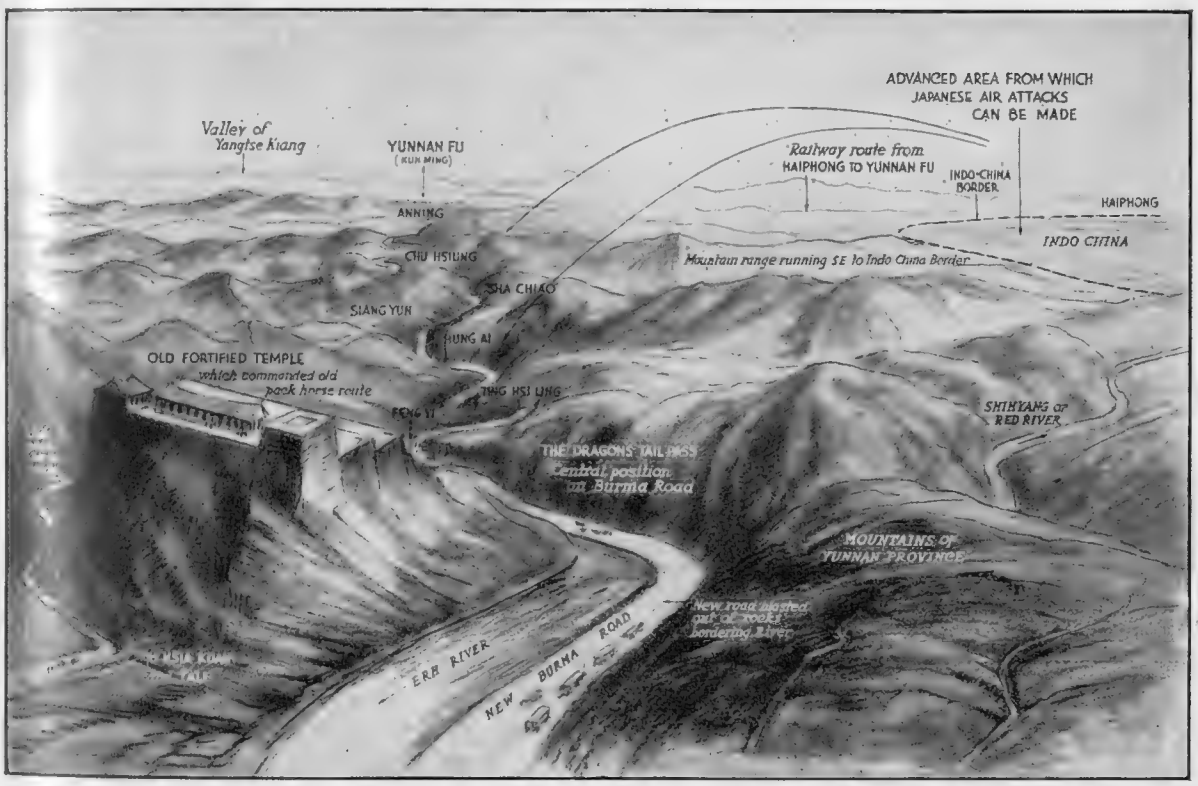
THE BURMA ROAD, LOOKING TOWARDS THE CHINESE FRONTIER; and the native-built bombers which the Japanese are using in their air operations against China—Working from their newly-acquired bases in French Indo-China, the Japanese are now within striking distance by air of the Burma Road. The bombers they are likely to use for this task are the Mitsubishi Otori 96, shown above. The Otori (which means "Phoenix") bears a strong resemblance to the German Junkers 86K, even down to the double-wing trailing edge flaps! It is fitted with two 550 h.p. engines and carries a crew of from three to five. The Otori was first built to the order of a Japanese newspaper; it has a retractable undercarriage "and other modern refinements." At the end of 1936 a machine of this type flew non-stop from Tokyo to Bangkok, a distance of over 2,000 miles



THE MILITARY OCCUPATION OF INDO-CHINA BY THE JAPANESE AFFECTS THE POSITION WITH REGARD TO THE BURMA ROAD—A diagram which shows the heights of the mountain ranges from the Gulf of Tonking to the famous Road

On left—When 40,000 Japanese troops landed at Saigon they proceeded to take over eight aerodromes as going concerns. Nantrang, the most northerly, would be the one which would most nearly affect the traffic on the Burma Road. This aerodrome is 40 miles to the north of Camranh Bay, but it would probably be possible to extemporise aerodromes in the valleys between the more or less parallel ridges running across the Tonking area which forms the most northerly portion of French Indo-China. From this region, with Hanoi and Haiphong as supply bases, the Japanese planes would have a run of some 500 miles to the Burma Road. The snag in the aerial picture is, of course, the rise in the ground as Yunnan is approached. A mountain mass with deep-cut river gorges has to be crossed to reach the district of the Bhamo-Yunnanfu road, one of China's vital life-lines

The BURMA ROAD

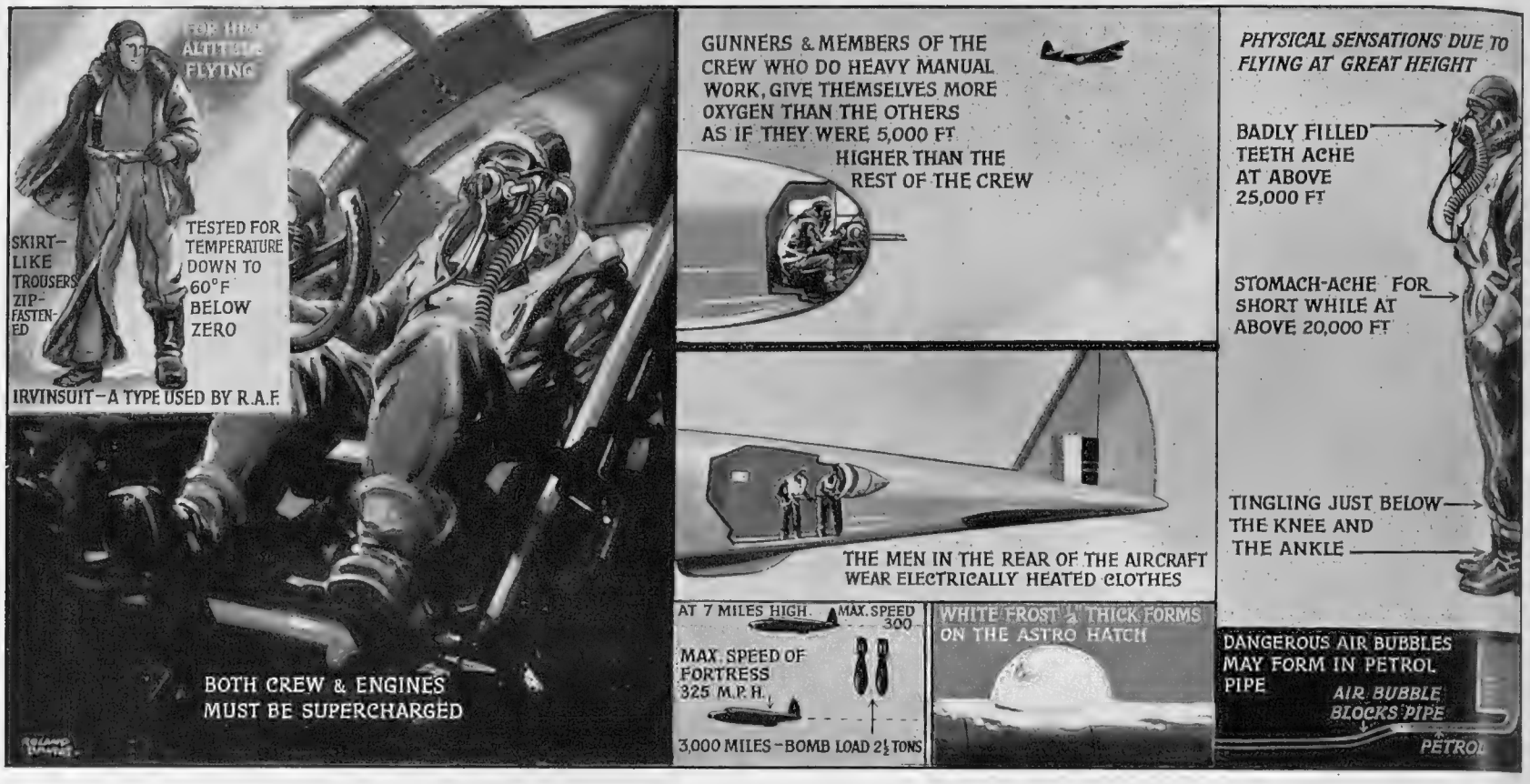


THE MOUNTAINOUS CHARACTER OF THE BURMA ROAD where Japanese aircraft would be likely to deliver their heaviest attacks—*Drawing by Percy Horne*

The central portion of the Burma Road lies around Tali, the beautiful city of the lake of Erh Hai. Some of the most spectacular gorge country in the whole of south-western China lies in this district. The point from which the above view is taken lies just to the south of Tali, where the Burma Road has been blasted out of the side of a deep gorge. The road runs beside the river in the centre of the view while to the left is shown the old pack-horse track which was much in use before the coming of the modern highway. These old tracks are still in use for slower traffic, sometimes yak-borne. An old fortified monastery perched high on a rocky bluff commanded the traffic route of ancient days. It now looks down upon both pack-horse route and the modern highway. In the background the Burma Road is seen proceeding on its tortuous way—it has to climb in and out of river valleys as it proceeds to Yunnanfu, where another road system connects with Chungking

THE AMERICAN GUNBOAT WHICH WAS BOMBED AT CHUNGKING: This is the *Tutuila*, which was hit during a recent Japanese raid on the Chinese Nationalist capital. During the raid twenty-six aircraft dropped bombs near the gunboat and destroyed her motor-boat. Japan had to apologise twice to the United States before Mr. Sumner Welles would regard the incident as closed

On right—**SUPPLIES FOR CHINA ROLLING ALONG THE NOW FAMOUS BURMA ROAD:** Immediately following on the reopening of the Road in October, 1940, a great stream of military supplies began to flow into China by this route. Here army lorries are seen rolling along in the neighbourhood of Chungking, the Nationalist capital. So far, supplies have been maintained without serious break. Wherever the road has been bombed, squads of coolies have at once been able to effect emergency repairs. Whether this will continue in the future remains to be seen!



HIGH-ALTITUDE FLYING and what it means for both crew and aircraft—*Drawings by Roland Davies*

If the recent flights of the Boeing Flying Fortresses, carried out at an almost fantastic height, are to become commonplace in the R.A.F., there are many factors with which the public should be acquainted. In his series of drawings above Mr. Davies indicates a few of these. To begin with, owing to the intense cold at 20,000 or 30,000 ft., the crews have to be equipped with special clothing. In some cases the Irvin suit is worn; this was invented by the well-known parachute designer. It consists of skirt-like trousers, zip fastened, and a special coat. It has been tested for temperatures as low as 60 deg. Fah. The men in the rear of the aircraft, during a stratosphere flight, go even farther, and wear clothing which is electrically heated. Both crew and engines must be "supercharged": with the engines this is a comparatively simple matter, although carburation at high altitudes presents very special problems, amongst which are the air bubbles formed in the petrol pipes which might check the flow of fuel to the cylinders. For human beings "supercharging" is not so easy: so rarefied is the atmosphere that without oxygen the frame could not withstand the terrific conditions. In fact, those members of the crew—such as the gunners—who have heavier manual work to perform have to give themselves larger doses of oxygen, as if they were, say, 5,000 ft. higher than the rest of the crew. The men employed on high-flying aircraft must be physically perfect in health, else their teeth will ache, they will tingle below the knee and in the ankle, and they will suffer stomach-ache above 20,000 ft.! Incidentally, the Flying Fortresses which have engaged in stratosphere flights have a maximum speed of 325 m.p.h., which diminishes to a maximum of 300 m.p.h. when flying seven miles high. The bomb-load which they can carry on a 3,000-miles flight is two and a half tons

STRATOSPHERE FLIGHT. . . .

A Description of What a High-Altitude Bombing Flight, such as that Recently Carried Out Over France by the Flying Fortresses, Entails

By LEONARD R. GRIBBLE

IN the centre of the flying-field the large four-engined Boeing Flying Fortresses looked like dream craft from a Jules Verne novel or a Wellsian fantasy. Their Wright Cyclones purred deafeningly their song of power. As the crews climbed aboard they experienced a thrill. They knew the bomb-load they were to carry; they knew what they were going to do.

In a matter of minutes they would be making history.

The Fortresses took off. Swaying gently as they left the ground, they began to climb. The purr of the four 1,200-h.p. engines became a roar. The retractable undercarriage and tail-wheel came up obediently and fitted snugly into the all-metal bodies. Nosing through a veil of cloud, the air giants turned on their course. Below them was unfolded the green, grey and brown chequered map of England.

The first operational stratosphere flight had begun.

For months the Press of both Britain and America had been full of speculation. The world waited for news of the Flying Fortresses in action. That action was about to be engaged.

The crew of the leading Fortress settled down in their battle stations, accustoming themselves to their electrically-heated flying suits. They had prepared themselves for the flight by a visit to one of the R.A.F.'s pressure chambers, where they had regulated their own oxygen supply, even allowing themselves to become unconscious for a few seconds. They had to be efficient to fight at any height up to seven miles, and to be efficient they had to be oxygen-conscious.

They knew what the tingling just below the knee and in the ankles meant. It is a common sensation for a flyer climbing to a considerable height. They knew, too, that when they got above 20,000 ft. there would be a bout of stomach-ache, to be got over by just sticking it and taking more oxygen. They had all been overhauled by the dentist, too, because after reaching a further 5,000 ft. anyone with badly-filled teeth would begin suffering from excruciating toothache.

They had been well drilled and exercised in the part they had to play that day.

The bomb-aimer once more went over vital figures he had to remember. At a height of four miles, and with the craft travelling at normal speed, he would have to release his charges when he was fully 2½ miles off the target. Parabolas, trajectories, micrometric measurements—the pages of his mind resembled the pages of a mathematical treatise.

The captain of the crew again went over the schedule of details—the time and place of meeting other, lighter bombers, the time and order of attack. For the raid had been planned long before, and every phase of it had to be executed with clockwork precision.

TWO VIEWS OF THE WONDERFUL BEAUFIGHTER, BELIEVED TO BE THE MOST HEAVILY-ARMED FIGHTER IN THE WORLD TO-DAY

The Beaufighter has been operating over Britain and elsewhere for some time; but it is only now that details of this aircraft can be published. It is an all-metal, mid-wing monoplane; it has two Bristol "Hercules" engines, developing 1,400 h.p.; it carries a pilot and observer; and it is armed with no fewer than ten guns—four cannon guns mounted in the fuselage and six machine-guns in the wings; it is believed to be the most heavily-armed fighter in the world. At a height of 14,000 ft. its speed is 330 m.p.h., and it has a range of 1,500 miles. In equipment it has navigation, identification and formation-keeping lamps, landing flares, signal pistol, oxygen apparatus, fire extinguishers, first-aid outfit and axe: it can be equipped, when necessary, with a four-gallon water-tank when being employed on desert operations. The machine has been so built that the two members of the crew can bale out with perfect safety even when the aircraft is diving earthwards at 400 m.p.h. Painted all-black, the Beaufighter has so far only been mentioned by name in connection with night operations; but it is also designed and fitted for work in the daylight. The Beaufighter has not only been used over Britain; on July 28, it has now been disclosed, it was used for the very damaging raid on aerodromes in Sicily

The gunners silently checked their oxygen apparatus. Once they got into action with the enemy they would have to be giving themselves an oxygen supply equal to what the others in the crew would take at an additional 5,000 ft.

But every man was part-perfect. "Force your way in and fight your way out" was the order. They were prepared to do just that. And they were off to attack the heavily-defended base at Brest. The bomb-shy *Gneisenau* and *Scharnhorst* were to be the recipients of their heavy bomb-loads.

Through the rarefied air, unwarmed by the summer sun, the great craft flew. The time-table was kept to the second. The £60,000 apiece aerial battle-cruisers winged over Brest when the base looked no larger than a man's thumb. By that time frost ¼ in. thick had piled up on the astro-hatch, and the front perspex windows had been opened because the frost on them made the glass opaque and rendered visibility impossible for the pilot.

The 12½-ton planes ran in to the attack. The bomb-aimer, his calculations as accurate as a logarithm table, sent his bombs crashing down into the target area, while the miles below were filled with screaming and bursting *flak*. Everything the Germans had went up to greet the daylight visitors. Hampdens and Wellingtons, flying below the giant Fortresses, began a running battle with swarming Messerschmitt 109F's. Brest shuddered and rocked to the bursting bomb-loads.

Back flew the Fortresses, their task well and truly done. A few hours later the world thrilled to the story of that stratosphere flight. In the country whose mechanics had made them, and in the country whose sons had flown them, the news of the flight was splashed in large headlines on the front pages of the Press.

A new era of offensive air warfare had been heralded in. Brest had been attacked that day at a greater height than had ever been reached previously on any operational flight.

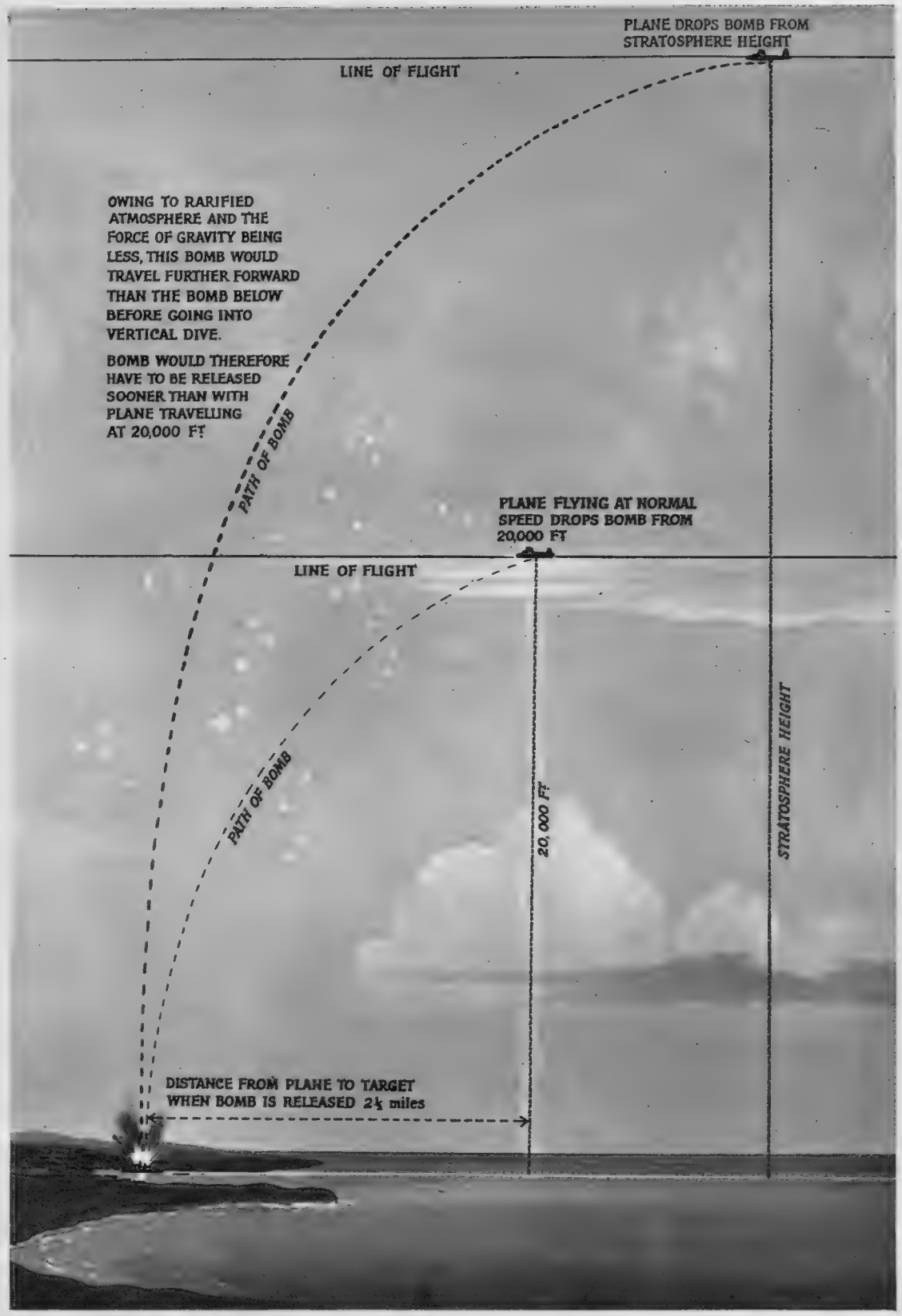
The stratosphere war continues. Emden has trembled under the great bomb-loads carried by the Fortresses, and much-scarred Kiel has sustained terrible wounds from a Fortress's onslaught. Before long they will carry their victory-dealing blows to the very heart of Germany, for their reach is longer than the enemy's.

With a 2½-ton bomb-load they can fly more than 3,000 miles. Their normal petrol supply can take them to Berlin and back twice. They are fast as well as furious. They can touch a maximum speed of 325 m.p.h. and while 7 miles high can maintain a speed only 25 m.p.h. less than their maximum, despite the rarefied air in which they are then operating.

All this because they are a marvel of aeronautical science. Years of research work have gone into making them perfect, which means making them worthy components of the R.A.F. The supercharging of their Cyclone engines at great heights is said to be a sheer masterpiece of aero-engineering. Peculiar stratosphere problems have had to be solved, such as the dangerous air-bubbles which may form in the petrol-feed pipes at a high altitude and the manipulating of the defensive guns in extremely low temperatures. For instance, at 36,000 ft. the temperature falls to —56·5 deg. C. —which is very low indeed, and which multiplies the engine designer's difficulties enormously.

Stratosphere problems are still being tackled, and vigorously, by R.A.F. research experts. Britain is determined to maintain and even enlarge the lead she has gained in this sphere of flight.

It was an R.A.F. officer, Flight-Lieut. Adams, who set up the altitude record of 53,937 ft. in June 1937. This has not been officially broken, although the



ONE OF THE PROBLEMS FOR THE BOMB-AIMER WHEN FLYING AT A GREAT HEIGHT—*Drawing by Roland Davies*

When flying at a height of 20,000 ft., a bomb has to be released when the aircraft is still two and a half miles away from its target. In the case of stratosphere flights the distance is even greater—an added complication being the slighter density of the air at great height: thus the bomb travels farther forward, owing to the decreased resistance, before it begins on its vertical descent. When bombing Brest our pilots declared that the town looked no bigger than a thumbnail! Bombing from the stratosphere would not be possible at all were it not for the wonderful bomb-sights now in use by the R.A.F.: with these, however, high-level precision bombing can be successfully carried out

Italians claim to have reached an even greater height. But the problems of flying at 50,000 ft. are not easy ones to solve. It is asserted that at such a height a pilot could not bale out if his craft were damaged. His body would explode even if he could leave the plane, which isn't considered possible. At such an altitude, if the door of the stratosphere aircraft were opened, the plane would crumple up like a piece of cardboard, due to the enormous sudden change in pressure of the atmosphere. To fly in any security at that height, therefore, an aircraft would have to be fitted with special pressure cabins—and in this direction a whole new field of research is opened up, because, of course, they would also have to be proof against bullets or cannon shells.

But stratosphere warfare is no longer a novelist's dream. It has become a part of the R.A.F.'s everyday routine. New planes will be produced in time. There will be changes in design, in tactics, and in apparatus. But the fact remains, undeniable and heartening, that to-day the R.A.F. fight offensively in the stratosphere alone.

"*Per Ardua ad Astra*" is their motto.

They are daily—and nightly—approaching closer to those stars.

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WAR AND PEACE: Some Contrast

A BOYS' BRIGADE CAMP AT ETON COLLEGE: The vanguard of 600 London boys, members of the Boys' Brigade, are now encamped on the famous Agar's Plough at Eton, owing to the kindness of the Headmaster, who has given them permission to do so. Throughout the month of August the boys will occupy the site in relays of 150. Here some of them are seen at dinner in the barn at the Old Etonian Club

ARMY PIONEERS BECOME PART OF THE LAND ARMY: Men of the Pioneer Corps are now at work in parts of Surrey and Sussex on land reclamation schemes, whereby much derelict land, including farms not worked for many years, is now producing valuable crops. The work includes trenching of waterlogged land which then becomes fertile, and the cutting back of overgrown hedges and undergrowth. In the above picture Pioneers are seen hoeing a field of cabbages which, for the want of labour, would have become overgrown with weeds

A NOVEL ARMY METHOD OF HARDENING-UP: This method has been adopted by a brigade in the Eastern Command, where it is known as the "Boxing Mill." There are fifteen men in each team, and they box all out for a minute. The contest is decided on the number of points gained by each team, and—as can be imagined—some grand scraps take place, much to the delight of spectators and participants alike!

GIRLS OF THE A.T.S. TRAIN WITH SOLDIERS: For the first time in military history in this country, a mixed Battery of men and women are working together at an Artillery Practice Camp. The girls are employed on artillery spotting and recording (as indicated recently in a series of illustrations published in *The Sphere*): they march and receive instruction with the men, and the experiment is said to be proving very successful

A REST HOME FOR CANADIAN NURSES IN HERTFORDSHIRE: A picturesque house with beautiful gardens, Digswell Place, at Welwyn, has been lent for the duration of the war by Colonel and Mrs. Maitland to the nursing sisters of the Royal Canadian Medical Corps. It is being used as a "Leave Home," where the nurses may spend a week-end, day or sick leave, and enjoy at the same time the amenities of English country life

AN ANGLO-AMERICAN AMBULANCE UNIT IN BRITAIN: These units operating in the Northern Region are doing great work in assisting the Civil Medical authorities, apart from their primary duties during air raids. The picture above was taken during the course of a recent spell of duty when stretcher cases were transferred from one hospital in the north-east to another. From left to right are seen Miss Eleanor Hedley, Miss Vivian Thomas, Miss Gladys Harper, Mrs. Dale (at typewriter), and Lieut. Mrs. Staniland (at telephone)

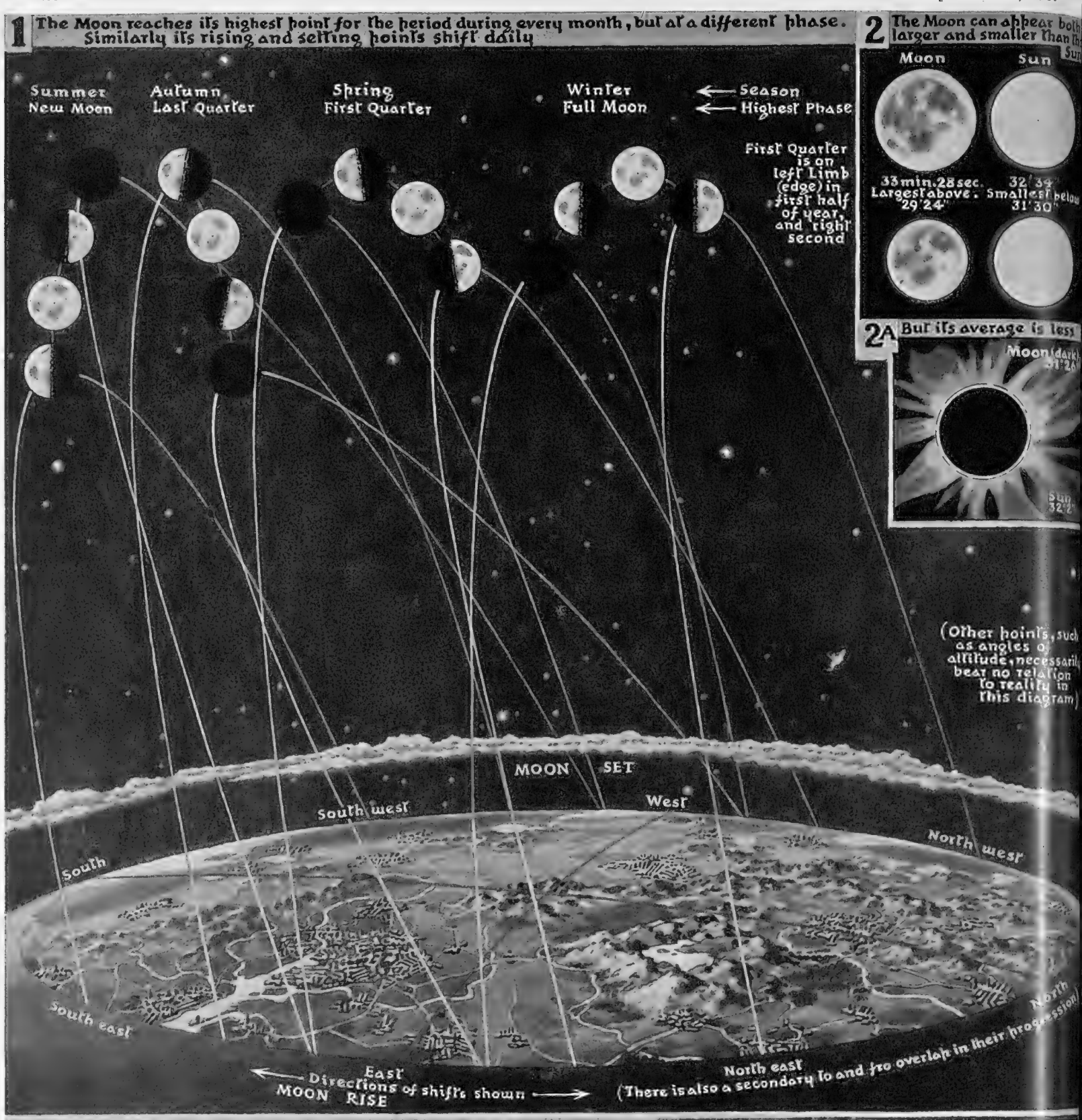
ing Scenes from Different Parts of the Country

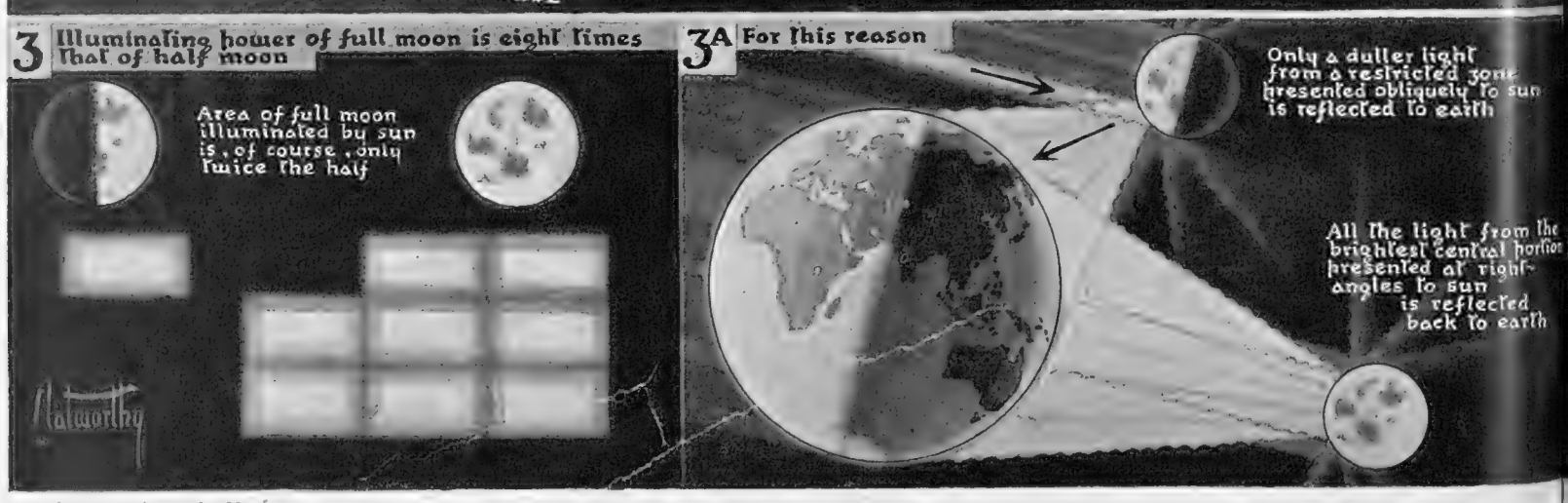
SEASON OF HIGHLAND GAMES IN SCOTLAND : At Blackford, in Perthshire, Highland dances figured largely in the Games held in aid of war charities. There was a large entry of children, amongst whom was nine-year-old Rena Lawless (seen in the picture on the right) : she was allowed to dance in her stockinged feet after forgetting to bring along her shoes ! In the picture above two young entrants are performing the Sword Dance. In pre-war days, many gatherings of this sort were held throughout the Highlands, and were quite a feature of the Scottish Season : most of the former participants, however, are now serving with the Forces in some capacity or the other—men and women alike

AT THE BLACKFORD GAMES IN PERTHSHIRE : A nine-year-old performer renders her dance after having received permission to dance in stockinged feet

A ONE-MAN SHIPYARD ON THE THAMES : A wartime study on the towing-path near London. An elderly enthusiast makes his own repairs to his "steamboat"—possibly in anticipation of the happier days of peace to come !

GIFT DAY, 1941—IN A RUINED WATERLOO CHURCH : Gift Day is usually observed on St. John's Day at St. John the Evangelist in Waterloo Road. It was, however, postponed this year until bomb damage had been cleared away, and was, instead, held on the Feast of the Transfiguration. The Vicar, the Rev. Charles W. Hutchinson, sat in the portico of the wrecked church all day to receive offerings towards the equipment of the Crypt Church : here he is seen in what remains of the aisle. The altar and roof of the church were severely damaged





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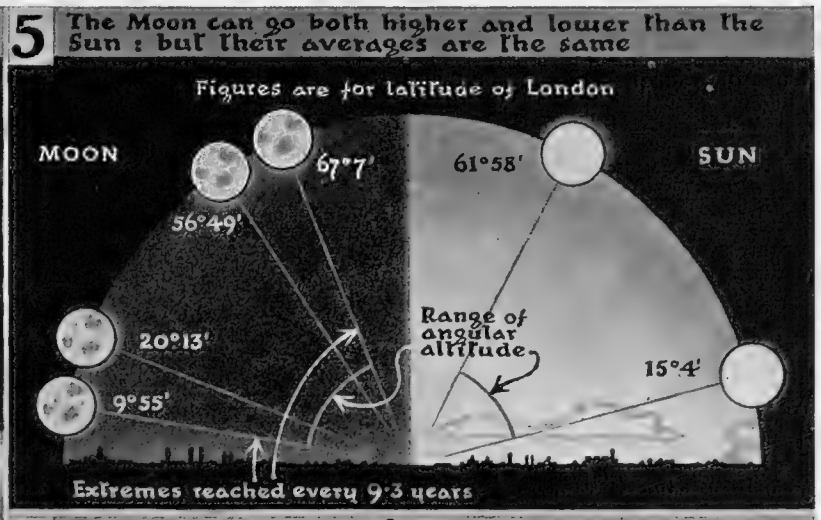
VAGARIES OF THE MOON: A SUBJECT WHICH TAKES ON A NEW INTEREST WITH THE LONGER NIGHTS AHEAD—

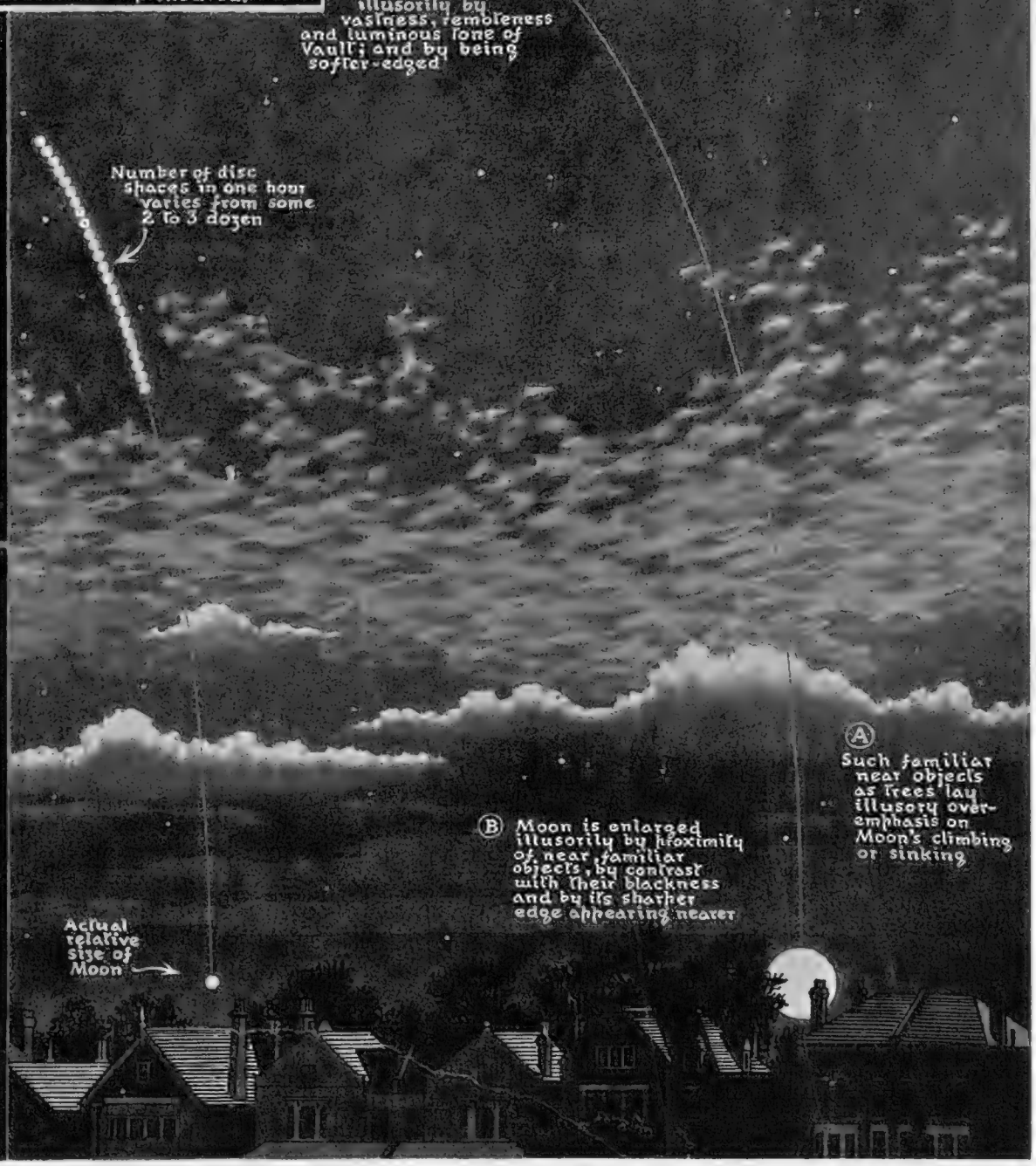
MANY people have been observing the movements of the moon as never before. They have noticed that at certain times the full moon seems to pitch itself high up in the sky and at others to rise and set at a low angle. They have wondered where and when the moon rose at different times. Did it follow the "obliquity" habits of the sun, rising more to the north in the spring and more to the south in the autumn? Did the moon ever get higher up in the sky than the sun? Was it really bigger as a harvest moon, appearing golden over the cornstooks? And how wide in the sky is a full moon? In the above drawing Mr. Clatworthy sets out to answer these points.

In **Diagram 1** we see that the moon reaches its highest point once in each month, but it is by no means always the full moon that does this: it may be during the other quarters when it is riding high in the night sky. It seems to hang about this position for a very long time on certain nights, but this is probably only a psychological effect due to the fact that there are no fixed points with which to mark the moon's progress. And there are scores of moon distances to be traversed in the sky (see left-hand side of **Diagram 6** for the number of moon widths in one hour). **Diagram 1** also shows that the moon rises in the east as the sun does and sets in the west; and that its rising point also moves to the north-east and the south-east.

But the moon, although it shifts its rising point, doesn't do it just like the sun. At the beginning of this month it was rising and setting on a low arch between south-east and south-west. The risings now begin to climb back towards the east point. The rising points are shown on the front edge of the land disc and the setting points on the further side of it.

In **Diagrams 2 and 2a** we see that the moon can appear to be larger or smaller than the sun. At certain eclipses it entirely covers the sun; at others only partially. These are known as annular eclipses for the moon leaves a ring of light all round, a





Some of the Moon's Strange Habits and Vagaries are Here Pictured in a Series of Diagrams—*By S. W. Clatworthy*

condition which prevents the corona appearing in all its splendour. **Diagram 3** shows that the moon at half-moon only gives one-eighth of the light of the full moon. This, at a first glance, appears strange, but **Diagram 3a** shows that the sideways condition of the "half" surface does not reflect the full glare from the whole moon face.

Diagram 4 shows that the lower altitude of the moon, say at 30 deg., will much reduce the light from the moon. A full moon at the zenith, 90 deg., will pour down much more light and consequently throw up a night raider more clearly against a cloud surface.

Diagram 5 shows that the moon does at times climb higher towards the zenith than the sun and it goes lower at others. It can reach 67·7 deg. against the sun's 61·58 deg., but the angles of elevation average out the same.

Diagram 6 dispels two illusions. The moon moves slower when rising and setting than when crossing the wide vault of the heavens. The idea that it moves faster may arise from the fact of its being seen over a clearly defined roof outline. The moon, too, is not bigger when near the horizon, although many of us have seen what we would call "huge harvest moons." The number of moon spaces there are in the sky is very large. Here on the left is a lunar space hour in the sky—24 discs have been traversed. Mr. Clatworthy adds the following points for those whose imaginations have been stirred: "Study of the moon is at first bewildering, for not even the most capricious of ancient classical goddesses could match her vagaries. The moon practically never repeats itself exactly. It requires some of the most complicated calculations in the whole of astronomy to foretell the behaviour of our supposedly homely moon. There are some hundreds of major or minor variations which would require a whole issue of THE SPHERE full of special diagrams to explain; the above diagrams are therefore concerned mainly with the facts. The moon is said to circle round the Earth; but in truth, they do about each other, about a centre of gravity some 3,000 miles from the Earth's centre."

The World of Books—By Vernon Fane

RUSSIA: STALIN'S COMPLEX LAND

Caucasus Journey: Lions are not like That: The Wives of the R.A.F.: An Analysis of Invasion: Reds, Pinks and Russians

BY some extraordinary felicity of timing, Mr. George Sava has only now published his account of a journey made in 1918 from Baku to Tiflis across the mountains of the Caucasus. His **VALLEY OF FORGOTTEN PEOPLE** (Faber and Faber. 12s. 6d.) is not only a fascinating travel-book of places still little known to the West, but a swift survey of some of the peoples from the Caspian to the Black Sea who have recently become our allies.

In the mountains of the Caucasus are some 200 different races speaking over 300 dialects and languages. Descendants of Genghis Khan rub shoulders with those who claim Xerxes and Darius as kinsmen. And the centuries bring little change. It is true that south of the mountains, in Georgia, Josef Stalin was born, and he has brought them schools and hospitals and new roads. But it is doubtful whether twenty-three years have broken down their proud problems of language—of the Avars, for instance, who have no sounds capable of being written, nor of the Tabasars, who, claiming that the only man who could speak their language died thirty years ago, "borrowed" that of the next valley rather than take the trouble to remember the correct form of their own.

It reads like the *Arabian Nights*. With an old family servant, the author, still a boy, set out into the Caucasus to look for his sister, kidnapped by a native princeling who left in exchange a note: "Do not grieve. I love her dearly." Custom demanded a blood-feud in revenge.

Shota, born in the mountains, was no ordinary servant. Poet, philosopher, Bolshevik — whose religion made his heart brave but not his conscience light—he proved a fortunate guide and commentator both to the author and to us. Without him we would have seen little of this land of lost empires.

Were it not for him we would never have discovered the hempen rope that swung the travellers down a sheer ravine into the Valley of the Kevsurs. In that "political Switzerland" fifty miles from Tiflis refugees of all creeds were welcomed by dwellers who practised Christianity, yet had not heard of Christ!

Of a Communist commissar who tried to teach them the gospel according to Marx, one said: "But he does not talk sense. He says we are all brothers, but we know that. He says we must share our sheep and our cattle. But we do that. He asks us to be good citizens and to provide education for our children, but we do that. Everything that he says we must do we have already done. Yet you say he is a man of sense? He ought to be sent to a merciful doctor."

In Kevsuria almost every day is a holiday—Sunday, because their neighbours, the Georgians, are Christians; Saturday out of respect for the mountain Jews; Friday for the Muhammadans; and Monday "because we Kevsurs are a free people and can do just as we like!"

Incidentally, those mountain Jews have not a drop of Semitic blood. They have descended from nomads and robbers from the East who were converted by Jewish colonists in the cities they sacked.

There are Germans, too, in Caucasia—pure Aryan. Their ancestors followed a prophetess on a proposed pilgrimage to Jerusalem, but encountering the riches of the Caucasus, delayed until a "next year" already spanning two centuries. And there are the Kubachi, Imperial Romans, who still produce golden coins bearing the image of the Emperor Hadrian. When one of them is asked about his origin he replies in his own tongue, "*Civis Romanus sum.*"

The book abounds in stories, little gems like that of the slaves who made a dignified protest to the Tsar against their liberation, deaf to their owners' pleas. Of the mixer of perfumes, straight from the pages of *Hassan*. Of ceremonies and romances cleaned of stardust by the wit and wisdom of the ubiquitous Shota.

I have not enjoyed a book so much since Marco Pallis gave us *Peaks and Lamas*. As a travel-book it is enchanting, but as a breaker-down of the frontiers of ignorance it has a deeper significance at this moment.

What is it that has a bill like a duck, is fur-clad, lays eggs and suckles its young, is web-footed, has a tail like a beaver, and lives in a burrow under a river-bank?

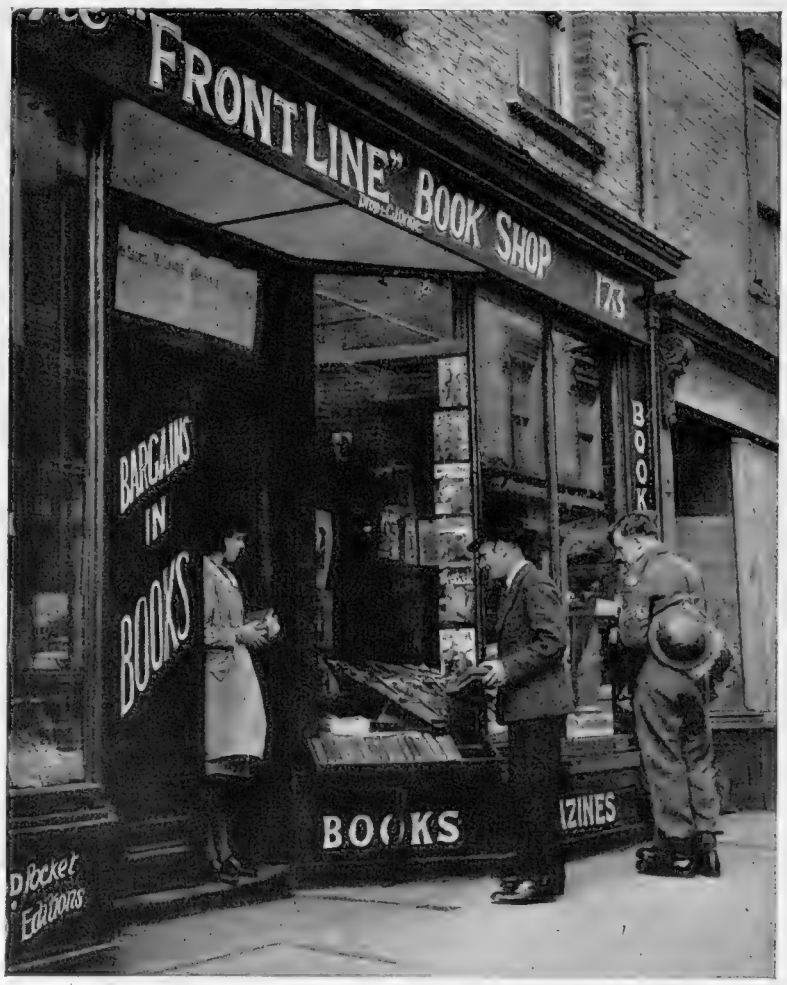
This is the only riddle Mr. Frank Buck asks in his new book, **ANIMALS ARE LIKE THAT!** (Robert Hale. 12s. 6d.), although much of it is devoted to answering current superstitions about animals. He is no respecter of illusions, and dethrones the King of the Jungle (the tiger, not the lion, is stronger and therefore more powerful, the panther the bravest) as easily as he questions whether the elephant really never does forget.

A lifetime in the jungle does not seem long enough for one man to have observed so much of the creatures who inhabit it, and it is a constant marvel that this is the third at least of his books—as crisp and fresh as if it were the first repository of his experiences. He wastes few words, and no one who read *Bring 'Em Back Alive* will have forgotten his enviable gift of writing exactly what he wants to say with the least possible fuss—a master of clear statement.

And what a wealth of information is here! From the dodo and dinosaur, whose fame he believes is largely due to "the cross-word puzzle fad which brought them from the depth of encyclopædias into wide public acclaim because of their usefulness in filling enigmatic spaces," he turns to elephants—white (by no means a liability; he once offered £10,000 for one, but found it was insured, in England, for £35,000!), and pink, remembering the only time in American history when thousands of teetotallers saw a pink one—in 1927, the heart of the Prohibition era!

He puts you right about gorillas; shows you how Jonah could not have been swallowed by any whale; agrees that the female of the species is more deadly than the male; provides a day-by-day commentary on the digestive processes of a python after swallowing a wild boar, and dwells with equal impartiality upon the wantonness of lionesses, a crocodile's four sets of teeth and the ability of the rhinoceros to sweat blood. By no means a sentimentalist, his description of the fight between a panther and two sharks reveals quite a lot about the kind of man he is, and his capacity for admiration and pity.

I almost forgot—the answer to the riddle is a platypus.



THE "FRONT-LINE BOOKSHOP" AT DOVER: Mr. C. J. Orme, the proprietor, has for so long been the target of cross-Channel shells (as has the town of which he is a citizen) that he has every right to name his bookshop in this fashion

Those of us who, in the clear, hot days of August and September of last year, were privileged to see, from the lawn beside a Kentish oasthouse, some of the crucial air combats of the Battle of Britain being fought and won in the face of heart-rending odds, will permit themselves a wry smile at Kay Carroll's pertinent introduction to her **COMPASS COURSE: The Log of an Air Force Officer's Wife** (Hutchinson. 8s. 6d.).

The Prime Minister summed it up in some immortal words; echoed by millions throughout the civilised world. In Holland, Belgium and France to-day the R.A.F. pilot is a hero plus: he is also a symbol of hope and deliverance. Mrs. Carroll, being a good Service wife, doesn't go much on all this glamour stuff, and reminds us that "the popular hero is, behind the scenes, just a husband like anybody else's."

She reminds us, in fact, of the years of intensive training which went to the building up of the youngest of the Services into the formidable arm it is to-day. Reading between the lines of her lively and personal narrative, we see a fine tradition in the making, and get to know something of the men who have helped to mould it and bring it to the triumphant test. Yes, and of the not-inconsiderable part played, too, by those women who have graduated from being "Cadet's bits" to the responsible position of the wife of an A.O.C.

The R.A.F. in peacetime took a gloomy view of marriage before thirty, and the blessed state, off the strength, was the reverse of beer and skittles. Flitting from one temporary "home" to another; surviving postings to "bachelor" stations; coping with the additions to the family, and still managing to get the best out of life, Mrs. Carroll tells her story with a disarming and intimate charm. Good humour and an almost fatalistic resilience in the face of difficulties pervade the book, spiced by a few healthy prejudices against, for instance, people who talk hunting shop and nannies who leave one in the lurch.

There is an irreverent story of an ex-R.F.C. pilot of the last war which gave special pleasure to one of them who has enjoyed every word of this delightful book. To that twin-engined aircraft with the crew of—at present—four: Soft Landings!

Professional soldiers as well as amateur strategists will agree that **HITLER'S WAR MACHINE AND THE INVASION OF BRITAIN**, by Dr. Wilhelm Necker (Lindsay Drummond. 12s. 6d.), is an important book. The Home Guard might also read it with profit.

Not only is it a very thorough examination of the organisation of the German Army and of its development from the end of the last war, but it discusses the machine in action in the light of what it was built to achieve and what it has achieved. Significantly, he calls attention to the German infantry and to its formidable role in any offensive. He warns us against the error of falling into the belief that the infantry is merely there to occupy territory which the Panzer divisions and the attendant parachute troops have won.

In his detailed analysis of how the German method will be adopted to an invasion, Dr. Necker stresses the need for the development of defence in depth and other counter measures which have been successfully exploited by the Russians since these chapters were written. It is significant that he thinks that gas will be used in any such attempted operation.

"THE AEROPLANE OF TO-MORROW"

307 pp., 65 sketches, 13 tables. Robert Hale. 12s. 6d.

People hate being made to think, but anyone who is lured into reading *The Aeroplane of To-morrow*, by Noel Pemberton Billing, by the excellent history and sketches of the aeroplanes of yesterday which take up the first fifty pages, will just have to go on for the other 250. Pemberton Billing is one of the most provocative of people, whether talking or writing. Nobody can agree with him 100 per cent., but whether one agrees with 10 per cent. or 90 per cent. of his ideas and theories, one gets new lines of thought on the lot.

In this book P.B. pays a deserved tribute to his technical assistant, Roger Tennant, a young Australian whose knowledge of ancient air history is as extensive as his fore-looking is far and wide. P. B. has the big ideas; Roger Tennant keeps a slide-rule check on them.

Naturally, P. B. has his say on High-Wing Loading; on Assisted Take-Off; on Scrap-Wings and Slip-Wings; on Slow Landings (and how pilots of fast landers and far-floaters *will* agree with him!); on Aerodromes, and why they ought to become smaller and smaller instead of bigger and bigger, which nobody can deny; on the Bomber, the Fighter and the Air-liner of to-morrow. And most of it is such plain common sense that no scientific coterie of technical Civil Servants could think of letting it happen. Others of his notions will be voted 100 per cent. plumb crazy by experienced constructors of aircraft. But P. B. won't mind. Also P. B. has a knack of turning out aphorisms and epigrams. Some of them will bite certain of his readers like strong acid. And his ordinary English is so good that it is extraordinary in a technical treatise. The sketches of aircraft of all sorts, from 1909 to 1941, might have been drawn by the ghost of the late Phil May, such is their economy of line and their amazing combination of portrait and caricature.

C. G. G.

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(STALAG XX A.)

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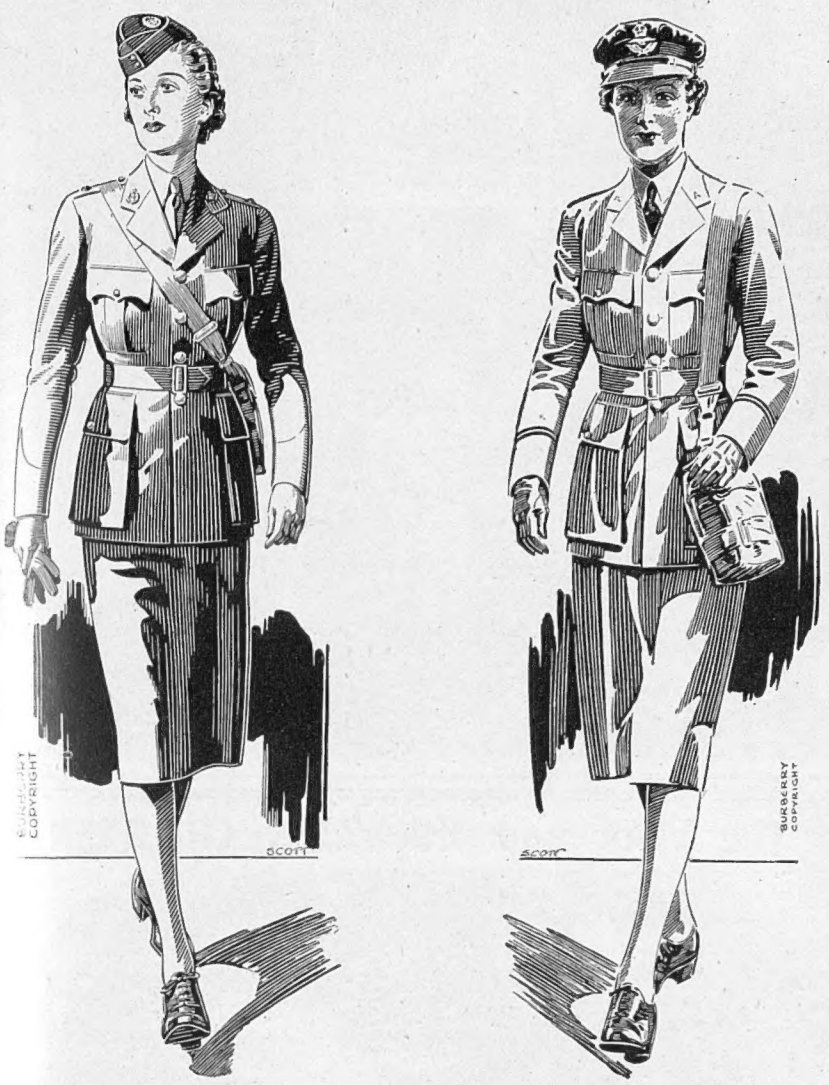

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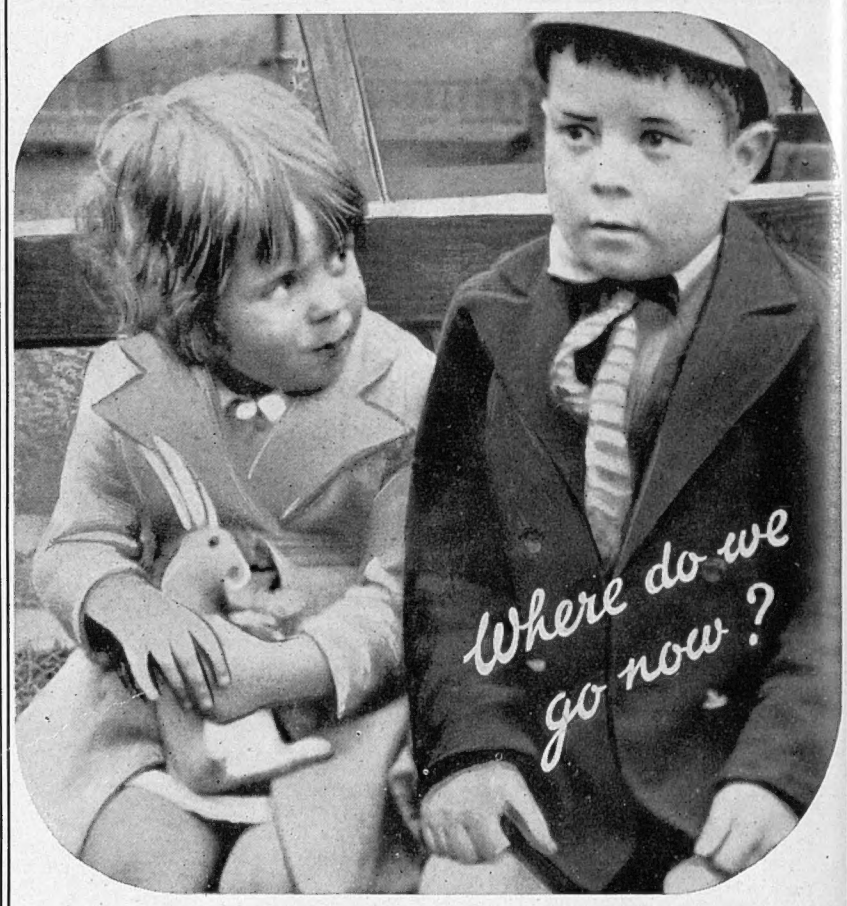

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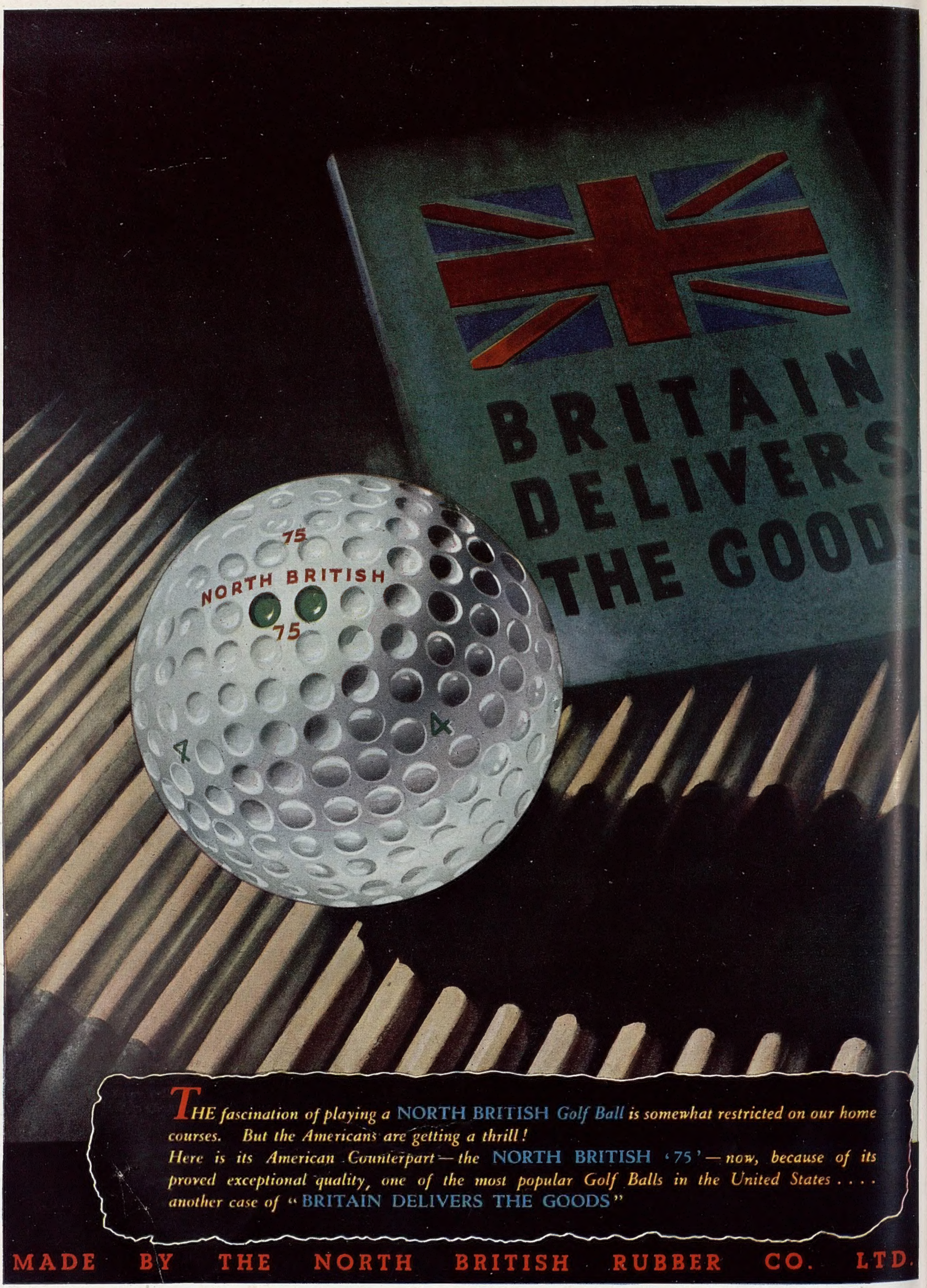

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